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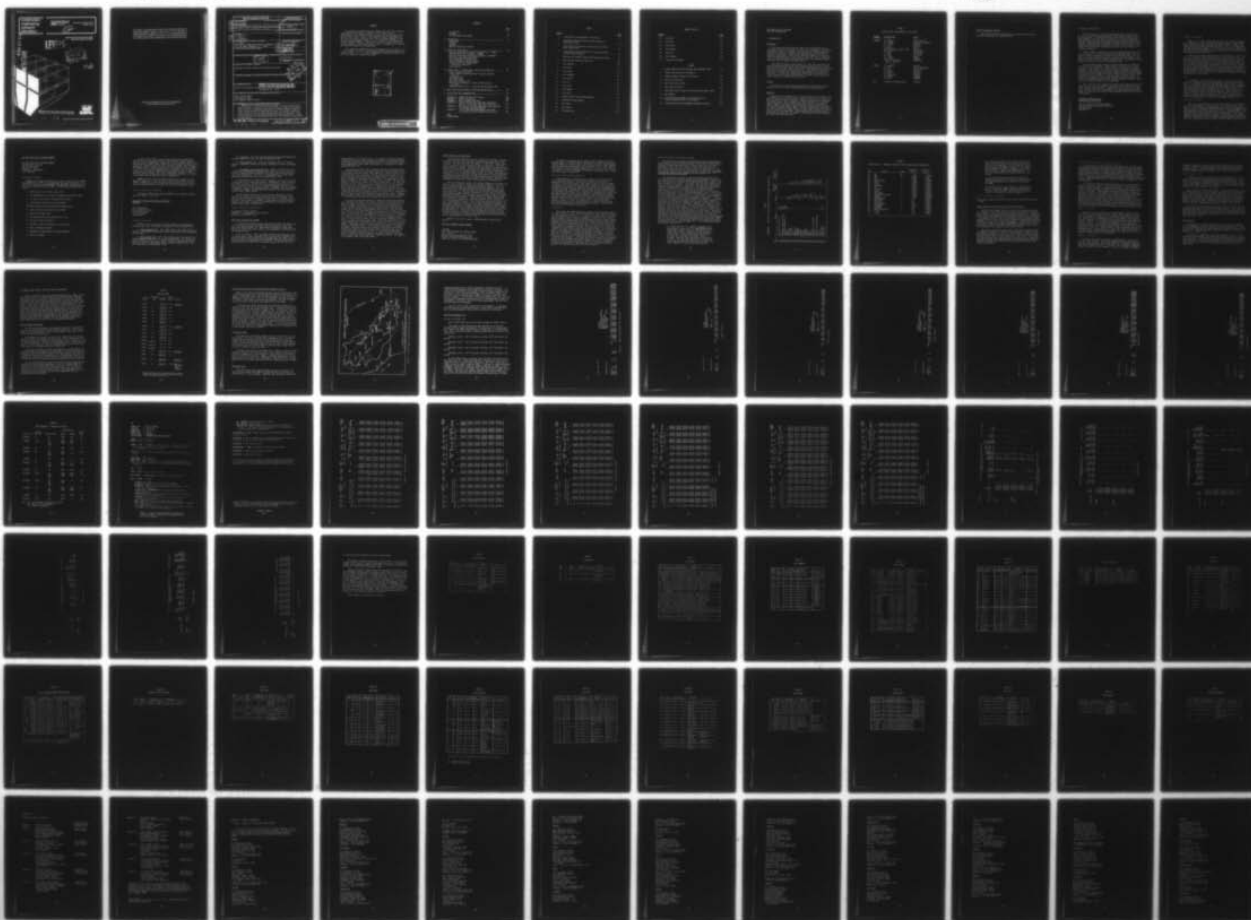
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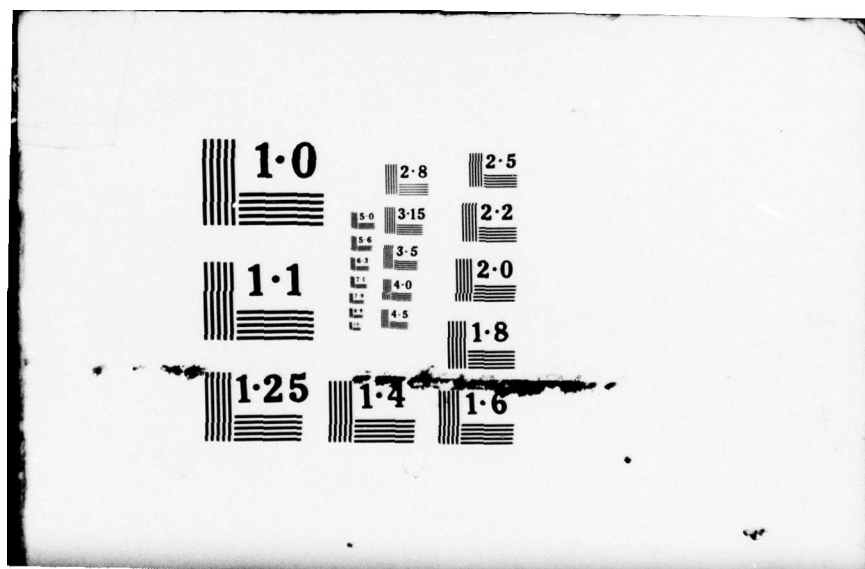
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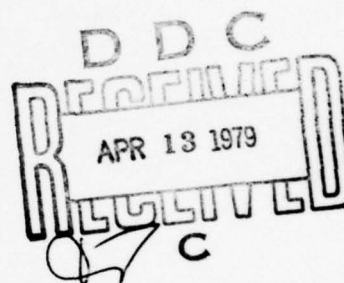
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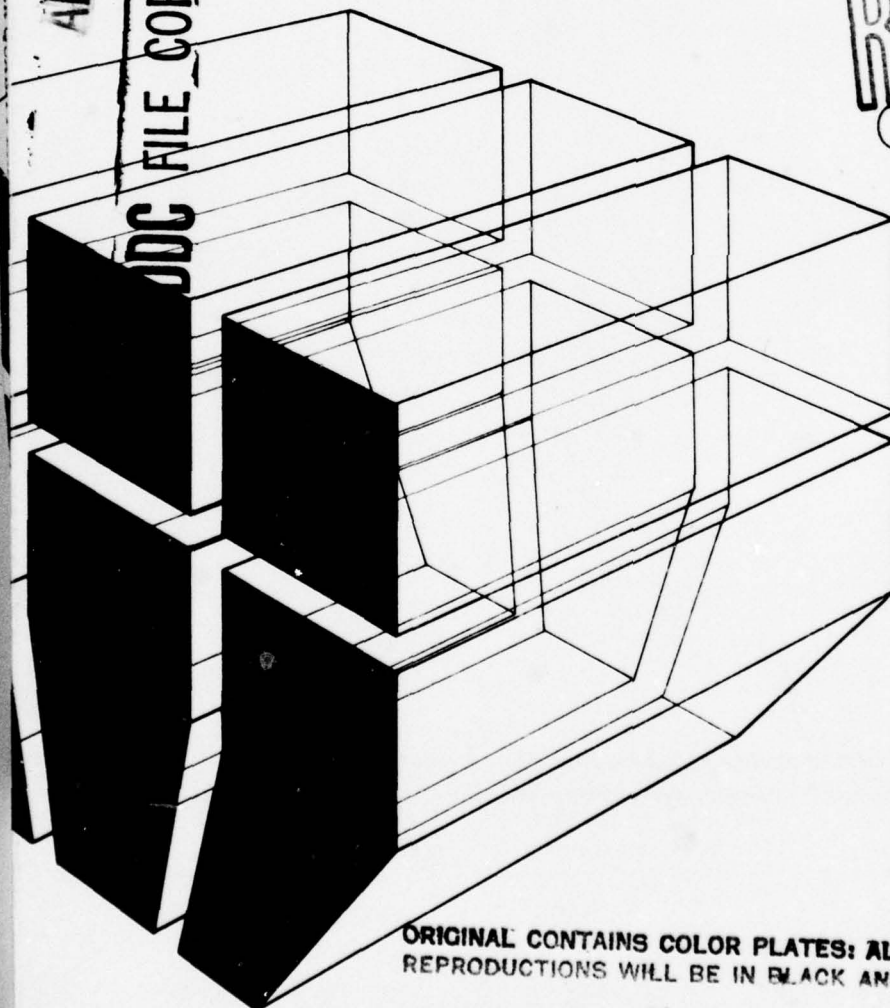
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WATER QUALITY DATA FOR ARMY  
MILITARY INSTALLATIONS

LEVEL II



by  
W. D. Goran  
R. E. Riggins



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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) Water quality models are being developed to assist planners and decision-makers at Army military installations to perform environmental impact analysis. Successful application of models depends on the existence and availability of water quality data. This report identifies major sources of water quality data and describes the location of sampling stations at or near selected Army military installations. The parameters measured are described and the dates and methods of measurement are provided.		



# FOREWORD

This study was conducted for the Directorate of Military Construction, Office of the Chief of Engineers (OCE), under Project 4A762720A896, "Environmental Quality for Construction and Operation of Military Facilities"; Task 01, "Environmental Quality Management for Military Facilities"; Work Unit 006, "Analytical Model System for Prediction of Environmental Impacts." Dr. L. Schindler, DAEN-MCE-D, was the OCE Technical Monitor. The efforts of Phyllis Kawano, Bob Tyler, and Edi Hogsett of the University of Illinois in preparation of the maps and tables are gratefully acknowledged.

This study was conducted by the Environmental Division (EN) (Dr. R. K. Jain, Chief), of the U.S. Army Construction Engineering Research Laboratory (CERL). COL J. E. Hays is Commander and Director of CERL, and Dr. L. R. Shaffer is Technical Director.

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## WATER QUALITY DATA FOR ARMY MILITARY INSTALLATIONS

### 1 INTRODUCTION

#### Background

Since new regulations from the Council on Environmental Quality (CEQ) have called for an analytical rather than encyclopedic approach to environmental impact assessment, there has been an increasing need for analytical techniques. Planners and decision-makers need efficient, economical techniques to quantify environmental impacts, including the impact on water quality. To help satisfy this need, the U.S. Army Construction Engineering Research Laboratory (CERL) is developing computerized water quality impact assessment models.

These models require varying amounts of input data, and their successful application depends on the existence and availability of accurate and reliable data. Water quality data have been collected for many years and are available from many sources. These data will assist installation personnel with the design of water quality data acquisition activities. In addition, knowing what information is available will enable developers of water quality models to tailor input requirements to data that are usually available to users.

#### Purpose

The purpose of this study was to determine availability of water quality data at and around selected Army military installations.

#### Approach

Researchers investigated the 21 installations listed in Table 1 for availability of water quality data. These facilities are all major U.S. Army installations and are located in widely scattered areas throughout the United States. The availability of data from the U. S. Environmental Protection Agency's (EPA) Water Quality Control Information System (STORET), the United States Geological Survey (USGS), the Army Environmental Hygiene Agency (AEHA), and state agencies was investigated for each installation. Maps plotting relevant data stations for each of these installations were made. Hunter-Liggett Military Reservation in California was then used as a model to find how much of this information was readily available to users.



Table 1  
Installations Investigated in This Study

<u>COMMAND</u>	<u>INSTALLATION</u>	<u>STATE</u>
FORSCOM	Ft. Bragg	North Carolina
	Ft. Campbell	Kentucky, Tennessee
	Ft. Carson	Colorado
	Ft. Drum	New York
	Ft. Hood	Texas
	Hunter-Liggett (sub Ft. Ord)	California
	Ft. Lewis	Washington
	Ft. Ord	California
	Ft. Polk	Louisiana
	Ft. Riley	Kansas
	Ft. Stewart	Georgia
	Yakima Firing Range (sub Ft. Lewis)	Washington
TRADOC	Ft. Benning	Georgia
	Ft. Bliss	Texas, New Mexico
	Ft. Dix	New Jersey
	Ft. Gordon	Georgia
	Ft. Knox	Kentucky
	Ft. McClellan	Alabama
	Ft. Rucker	Alabama
	Ft. Sill	Oklahoma
AMC	Jefferson Proving Ground	Indiana

Mode of Technology Transfer

This report should be referenced in an Engineer Circular which describes the subject and usage potential.

## 2 SOURCES OF WATER DATA

Army installations can obtain surface water data from Federal, state, local, and Army-unique agencies. Major Federal sources include the EPA's STORET, a national data storage and retrieval system, the USGS's NAWDEX, a national index of sources, and the USGS's WATSTORE, an in-house storage and retrieval system for their nationwide monitoring programs. Maps provided in subsequent sections of this report plot the STORET and WATSTORE sampling stations at selected installations. Also included in this chapter are addresses that the user can contact for further information.

STORET, NAWDEX, and WATSTORE are all nationwide computerized information systems. The actual data published in the USGS Water Year Reports is the same information entered in the WATSTORE system, but each report contains information only for one state and for one year. The Water Year Reports provide information beyond that in WATSTORE, including graphics and data from intensive watershed surveys.

The major Army-unique sources of surface water data are AEHA and the installations themselves. AEHA conducts intensive water-related studies at installations in response to specific problems or planning proposals. Also, AEHA helps installations set up monitoring programs, and installation National Pollution Discharge Elimination System (NPDES) reports are routed through this agency. However, only the annual drinking water data are available in a data storage retrieval system. The installations themselves run regular monitoring programs and file reports with command headquarters, EPA regional offices, and AEHA. These data are available now only in hard-copy form.

Most state and local agencies collecting significant quantities of water quality data are now STORET cooperators; thus, STORET is the most logical source for these data. Some states, such as California, New York, and Texas have their own systems, but also cooperate with STORET. Major state sources are identified and discussed in the last section of this chapter.

### Storage and Retrieval of Water Quality Data--STORET

U.S. Environmental Protection Agency  
Office of Water and Hazardous Materials  
Washington, DC  
202-426-7792

### *Information Available*

STORET is a national system that provides data on lakes, streams, wells, reservoirs, rivers, and other waterways from more than 200,000 unique collection points throughout the United States. STORET users include Federal agencies, more than 40 states, river basin commissions, and regional and local agencies. In Fiscal Year (FY) 1977, STORET had 152 users storing information, and 290 users retrieving information; the system was accessed 35,000 times.

STORET was previously administered by the Department of Health, Education, and Welfare's Public Health Service, and had been transferred to various agencies before becoming a part of EPA. However, the organizational structure has been intact since 1964 and some STORET data are available from the 1950s. In the late 1960s and early 1970s, many states joined the system and contributed to a period of major growth. Currently, the USGS WATSTORE system's water quality and stream flow data can be accessed through STORET, and are updated monthly into STORET. USGS groundwater data, although not currently available, are being processed for use in the system and will probably be available for storage and retrieval in the future.

### *Cost*

Arrangements to use the STORET system can be made with the national or a regional EPA office (see Appendix A for a list of the offices). A one-time request may be processed without charge. Regular users are assigned an account number and then contract for interagency fund transfers with EPA or directly with the computer service organization supplying the time-sharing service. Storage costs are minimum, but computer connection time and retrieval costs are more expensive. Charges per use average \$3 to \$6. Users are expected to provide their own computer terminals and terminal supplies. An additional user expenditure is required for personnel training time.

### *Storage and Retrieval*

Data can be stored directly in the STORET system by remote terminal. If a user does not have a terminal, or if there is not a convenient terminal nearby, arrangements can be made to work through an EPA regional office or through a local USGS office. Such arrangements are more expensive per use, but may be practical for infrequent users. For frequent users, direct terminal access is recommended. Input can be made by sending punched cards or magnetic tape as well as by terminal keyboard. Information can be retrieved by remote terminal access; however, for bulky jobs, output is mailed from the computer facilities in



Washington, and generally will be received by the user within 2 to 3 working days. Data can be sent in report form or on machine-readable discs or tapes.

Information entered into STORET is identified by location data and parametric data (i.e., date, time, and depth of sample). Location data includes a monitoring station ID number, geographic coordinates, state and county codes, and perhaps a river mile index. In the past, river mile index alone was used for identification in some areas (i.e., the Ohio river basin and the Puget Sound area). All current data can be accessed by collection station coordinates; however, other access methods may be necessary to obtain some historical data.

#### *STORET Uses*

STORET analysis programs can help users monitor water quality trends, measure compliance with water quality standards, trace pollutants, and file water quality reports, budget requests, and management basin plans. STORET files include:

1. Water Quality File:

- a. Progress Report File. Public Law 92-500 requires the submission of annual reports to EPA concerning all sources of pollution, including information on the nature and extent of these sources, recommendations for pollution control, and costs of these controls. This file provides a format for compliance with this requirement.

- b. Standards and Criteria File. STORET has several report programs that document the effects of water pollution abatement activities in relation to state and national criteria for specific water quality standards and goals, specifically in relation to 1983 goals of water quality established in Public Law 92-500.

- c. Toxic Substances File. All toxic substances for which water quality analyses have been performed are defined within the STORET system. If a user wants to determine levels of toxic substances (such as mercury, cadmium, and toxaphene), the STORET Toxic Substances File contains formats to analyze the presence or absence of these materials.

- d. Basin Planning File. River basin planning is primarily the responsibility of the states and is enumerated under sections of Public Law 92-500. This file provides a format to display and analyze water quality data for an entire river basin or a section of that basin.

- e. Research File. This file provides many formats in which researchers can display and analyze their water quality data. For example, a broad-ranging Great Lakes research program, coordinated at EPA's Grosse Isle Laboratory, uses this STORET file.

2. The Waste Facilities Municipal Wastes Inventory File. This file is the repository for data on municipal waste facilities in the United States, including those privately owned. Data are maintained on the location, capacity, and treatment process of each facility, as well as on several other related characteristics.

3. Biological Data Summaries and Fish Kill File. Whenever water pollution is responsible for killing fish, the state submits a report to EPA, indicating the location, the time, the type of water body, the pollution involved, and the estimated type and number of fish killed. These reports, dating back to 1960, are maintained on this file, and summary reports can be retrieved.

4. Award Summaries Contract Awards File. This file provides information dating back to 1952 on the thousands of award grants authorized by the Federal Government to municipalities for construction of sewage treatment plants. Data are maintained for each award grant, and report forms allow users to trace the pattern and progress of these grants.

Each file has analytical and graphic programs that can process and display data in a variety of forms for specific uses.

#### *Personnel Training Requirements*

Some training is necessary to use the STORET system. User manuals are available, and STORET holds basic and advanced training seminars at various locations throughout the United States. Generally, a direct user needs some familiarity both with remote terminal use and with the unique aspects of the system. Direct assistance is available to users from the Washington User Assistance Office, and there is an annual STORET Users' Conference which addresses system problems and changes. There is also an index HELP in the system to assist terminal users, and User Assistance publishes a quarterly periodical with HELP updates.

#### *Sources of Additional Information*

1. *An Introduction to STORET for Water Quality Trend Analysis*, Water Quality Analysis Branch, Monitoring and Data Support Division, USEPA, November 21, 1975.

2. *STORET EPA's Computerized and Water Quality Data Base*, USEPA, Office of Water and Hazardous Materials, Washington, DC.

3. *STORET User Handbook*, USEPA, Office of Water and Hazardous Materials, Washington DC.

## National Water Data Exchange--NAWDEX

National Water Data Exchange--NAWDEX  
U.S. Geological Survey  
421 National Center  
Reston, VA 22092  
Telephone: 703-860-6031  
FTS: 928-6031

### *Information Available*

NAWDEX is an index of sources, but is not a source itself. NAWDEX was established in 1976 to link collectors and users of water data. Information is available through NAWDEX from the Water Data Source Directory and the Master Water Data Index. The Water Data Source Directory lists:

1. Organizations that collect water data
2. The geographic area in which an organization collects data
3. The type of water data collected and available
4. Sources where these data may be obtained.

The Master Water Data Index provides information on:

1. Sites for which water data are available
2. Location of these sites
3. The organization collecting data at a site
4. The type of data collected
5. Periods of time for which data are available
6. Major parameters measured
7. Frequency of measurements of these parameters
8. Media of storage.



To obtain actual data, the user must contact the referenced organization or a data storage system, such as STORET, where reference data are stored. NAWDEX has a network of local assistance centers, each of which has computer access to the Directory and Index files (see Appendix B). Some assistance services are free; however, fees are charged for NAWDEX services involving expenses for computers and other agency costs. Fees may also be charged directly by organizations to whom data requestors are referred. Additional information, as well as informational packets with materials describing NAWDEX, WATSTORE, and STORET, is available from the National Center in Reston, VA.

NAWDEX may be of value in obtaining water data information from agencies cooperating in the Water Data Source Directory but not with STORET. NAWDEX may also be an important preliminary check to identify water-collecting agencies and their activities in a particular area.

#### *Source of Additional Information*

The National Water Data Exchange--NAWDEX, U.S. Geological Survey, Open-File Report 77-259, 1977.

#### Water Data Storage and Retrieval Systems-- WATSTORE

Chief Hydrologist  
U.S. Geological Survey  
437 National Center  
Reston, VA 22092  
FTS 928-6879

#### *Information Available*

WATSTORE is the storage and retrieval system for the Geological Survey's water data. The system is composed of the following files:

1. Station header file. This index contains the identification, location, and physical description of more than 100,000 sites where USGS collects data.
2. Daily values file. This index includes more than 118 million values measured either daily or on a continuous basis. Stored data include stream-flow values, river stages, reservoir contents, water temperatures, specific conductance values, sediment concentrations, sediment discharges, and groundwater level.



3. Flow file. This file contains annual maximum and minimum peak discharge and stage values for each surface water site.

4. Water quality file. This file includes results of chemical, physical, biological, and radio chemical analysis of surface and groundwater.

5. Groundwater site inventory file. Stored in this file are inventory data of groundwater sources, including site location and identification, geohydrological characteristics, well construction history, and field measurements. This file is independent but is cross referenced with the water quality file and daily values file.

ALL WATSTORE data are maintained on computer facilities at the National Center of the Geological Survey. Information is input from more than 9000 data collection stations and from three water quality labs. Data are available as printout or in machine-readable form, and can be processed in various statistical programs. Only USGS data are contained in WATSTORE; however, the WATSTORE water quality file can be accessed from the EPA's STORET system.

The USGS Water Resource Division's district offices are contact sources for information on data availability and user charges. User fees are \$25 per hour plus computer printout costs, for which fees are charged in \$5 increments. Brochures, a directory of local assistance centers, and further information on WATSTORE can be obtained from the USGS National Center in Reston, VA.

#### *Source of Additional Information*

C.R. Showen and M.B. Edwards  
WATSTORE, U.S. Department of the Interior  
Geological Survey INF-74-23

#### USGS Water Resource Data Report

The USGS has published a water resource data report for each state in the United States for each water year since October 1, 1974 (the water year begins October 1). These reports combine all USGS information for stream flow, water quality, and groundwater collected during the reported period.

Prior to October 1, 1974, the USGS published collected water data in several ways. Stage, discharge, lake, and reservoir contents information was published in annual series through water year 1960, then in a 5-year series for 1960-1965 and for 1966-1970. Water quality records were published from 1941-1970 in a separate annual series "Quality of

Surface Waters of the United States." Groundwater data were published in another series entitled, "Ground Water Levels in the United States." These reports may be purchased from the Branch of Distributions, United States Geological Survey, 1200 South Eades St., Arlington, VA 22202, phone (703) 557-2751.

For water years 1961-1974, streamflow data were published by USGS on a state boundary basis, and water quality data were published either in the same or separate reports from 1964-1974. Current copies of data from 1971-1974 are not available from the Branch of Distribution, but may be obtained from the USGS Water Resource District Offices or from National Technical Information Service (NTIS), U.S. Department of Commerce, Springfield, VA 22151, telephone (703) 557-4600. All data from October 1, 1974 to the present are available from NTIS. The USGS Water Resource Division intends to continue publishing the current combined water data on a state boundary basis. However, for any particular state, the number of volumes and the drainage basins included in each volume may vary from year to year, according to the amount of data collected and the number of pages required to print the data. To determine which volume in a particular year covers a particular area of interest, the user should contact the appropriate USGS district office. Appendix C lists USGS Water Resource Division Regional and District Offices.

Each report summarizes hydrologic conditions during the reporting year, defines terms used in the report, explains surface water station and well numbering systems, explains each station's relationships to special networks and program (i.e., hydrological bench marks and pesticide tracing programs), and provides information on stage and discharge data collection and groundwater level records. Also included are lists of current USGS reference publications and an index by station name. The published data are organized alphabetically by drainage basin and the actual output from WATSTORE is printed (see Figure 3 in Chapter 3). Within a drainage basin, stations are listed alphabetically by name, are identified by number, and are located by geographic coordinates, township and range, county name, and written description. Stream flow and water quality information for a particular site are listed together. Groundwater data are listed separately by county and then by valley (or drainage basin). The data may be published 3 to 12 months following a particular water year; however, this varies by district. The data are compiled at the district level; therefore, the user can direct questions to the district office. Copies of published data should be ordered from NTIS; however, district offices have mailing lists of users who receive each year's published reports. See Appendix D for examples from a published report.

## Water Resources Investigations

Each USGS Water Resource district periodically publishes listings of current and past water resource investigations pertaining to that district. For most districts, the format is a one-sheet foldout which includes a map of active hydrological data stations and a listing of maps, reports, and papers. These listings are updated at approximately 5-year intervals; however, the format and publication interval vary from district to district, and many districts publish annual supplements. These reports list historical studies as well as present investigations. Frequently, a map is included that outlines areas of current hydrologic investigations; some districts include choropleth and isoline district maps which provide information on major river discharge, sediment yield, groundwater availability, runoff, precipitation, and minimum flow.

These investigation reports also include information on cooperating Federal, state, regional, county, and municipal agencies. Some districts publish reports in cooperation with other agencies (i.e., the Kentucky district publishes through the Kentucky Geological Survey); often, districts list publications that are available through cooperating agencies (e.g., the New Jersey district lists special reports on water supply and water quality, as well as circulars on wells, floods, droughts, and other topics available through the New Jersey Department of Environmental Protection). USGS publications listed include open file reports and information available through district offices on a variety of hydrological topics. Also listed are professional papers and water supply papers available from the Superintendent of Documents, and hydrologic investigation atlases, circulars, and geologic quadrangles available from the U.S. Geological Survey Publications Offices in Denver and Washington, DC. Some of the publications listed concern research in an area specific to an installation, and some have relevant data not otherwise available. Moreover, these publications may provide characteristic and background information on hydrologic conditions during particular periods and at particular times.

Appendix E provides a copy of a Water Resource Investigation Report.

## Army Environmental Hygiene Agency

Commander  
U.S. Army Environmental Hygiene Agency  
ATTN: HSE EW C  
Aberdeen Proving Ground, MD 21010  
Autovon 584-3289/3554/3816/3919 or  
Commerical (301) 671-3289/3554/3816/3919



The Army Environmental Hygiene Agency (AEHA) (formerly the Army Hygiene Agency) was established in the 1940s to provide field and laboratory support to installations in health-related areas. AEHA conducts specific problem-oriented water quality studies (such as water quality evaluations, planned treatment feasibility studies, and aquatic biological studies), as well as broader environmental assessments that include some water quality information.

#### *AEHA Field and Laboratory Assistance*

AEHA assistance is provided at the request of the installation and/or the Major Command. Since AEHA is funded directly by the Department of the Army, services to installations are free of charge. To assess a particular problem, AEHA sends a team of scientists for approximately 2 to 8 weeks of intensive data collection, with subsequent laboratory analysis and data analysis; conclusions and recommendations are then provided. Occasionally, further data collection and analysis are necessary, depending on the situation, but long-term data collection and monitoring are not the usual procedure. AEHA personnel, however, will help installations establish their own water quality monitoring programs and work with installation personnel over a period of several months. AEHA is also sent file copies of all installation NPDES monitoring reports. Thus, the organization is aware of the various water quality problems on installations and provides a central source for certain types of water quality data.

#### *AEHA Reports*

The studies that AEHA conducts on installations may result either in a letter report to the Facilities Engineer or other involved installation and Command personnel, or in a publication, depending on the scope and the amount of data involved. Appendix F contains a list of water quality related studies conducted by AEHA which resulted in publications between FY70 and February 1978 on the 21 selected installations. AEHA conducted one published study during this period for every installation except Yakima Firing Center and Fort Lewis. A wide range of water-related studies are conducted by AEHA, and these studies are categorized in Appendix F according to type for each installation. In the published report, the actual data collected are printed as appendices. Usually, there is an explanation of field and analysis procedures. These data may later be helpful to installation personnel for reference and documentation, but the data collected are problem-specific and oriented to a situation-unique analysis. Collected data are not stored in any computer system and are available only in hard copy form. Copies of published reports can be requested from AEHA. However, there is no available listing of letter reports; these must be traced through installation channels and therefore are more difficult to obtain.

### *AEHA Drinking Water Surveillance Program*

One of the major programs of the AEHA Water Quality Engineering Division (WQED) has been the Drinking Water Surveillance Program (DWSP). AEHA has collected and analyzed data from virtually all U.S. Army installations since 1972-1973. Prior to 1972, USGS conducted this monitoring program and sent hard-copy reports to installations. The most current published list of participating installations is U.S. Army Drinking Water Surveillance Program Directory, October 1977, which is available from AEHA upon request.

The AEHA program consists of routine sampling and analysis of water sources and distribution systems using 26 parameters required by the Interim National Primary Drinking Water regulations. Table 2 lists these parameters, and Table 3 lists pesticides for which sampling and analysis are also conducted. During 1977, the DWSP was reorganized to comply with amended Federal regulations. The most significant change requires installations to file reports with the USEPA regional administrators or to a state agency having jurisdiction over public water systems rather than at a centralized Federal level. Since AEHA is a Federal laboratory, its assistance to installations in this program will be phased out as legislation in various states requires Federal facilities to be regulated by state environmental regulators. A letter regarding the reorganization dated 10 Aug 77 from AEHA to installations states that only Arkansas, Alabama (Fort Rucker and Fort McClellan), Kentucky (Fort Knox and Fort Campbell), Nebraska, Oklahoma (Fort Sill), and South Carolina were at that time granted primacy. However, USEPA Region 5, which includes Arkansas, Louisiana (Fort Polk), New Mexico, Oklahoma, and Texas (Fort Hood and Fort Bliss) did not intend to certify Federal laboratories to do analytical work in that region. Therefore, personnel on installations within these states must work directly with the regional EPA and the appropriate state offices. With the reorganization of the DWSP, the analytical data previously collected by AEHA were set aside as a permanent drinking water quality data base (DWQDB), which was explained in a Disposition Form (DF) from AEHA Water Quality Engineering Division, dated 30 August 1977. The following paragraphs are excerpts from this DF:

1a. These data are in a computer-accessible file maintained on tape at the U.S. Army ARRADCOM UNIVAC 1108 Computer Center located at Aberdeen Proving Ground, MD. They are accessible in two general retrieval modes: Hold records (duplicates of DWSP printouts for any sample locations); single parameter histories from the source, installation, or state. The retrieval output will be provided in a hard copy form and can also be used as input into other programs for data manipulation purposes.

Table 2  
Parameters -- National Interim Primary Drinking Water Regulations

No.	Name	mg/ units	Units	Reference Limit	Detection Limit
01	Alkalinity, as CaCO <sub>3</sub>		--	1	
02	pH		--	--	
04	Hardness, Total as CaCO <sub>3</sub>		--	1	
05	Specific Conductance	mg/ mhos	--	1	
06	Calcium	mg/ "	--	1	
09	Sodium		270	1	
21	Chlorides	"	250	0.5	
22	Fluorides	"	2.4	0.1	
23	Iron	"	0.3	0.1	
24	Magnesium	"	0.3	0.1	
25	Manganese	"	0.05	0.03	
26	Sulfates	"	250	1	
41	Arsenic	"	0.05	0.02	
42	Barium	"	1	0.3	
44	Cadmium	"	0.010	0.001	
45	Chromium	"	0.05	0.025	
46	Copper	"	1	0.025	
47	Lead	"	0.05	0.005	
48	Mercury	"	0.002	0.0002	
50	Nitrates, as Nitrogen	"	10	0.04	
51	Silver	"	0.05	0.001	
52	Solids, Total Dissolved	"	500	1	
53	Zinc	"	5	0.001	
84	Selenium	"	0.01	0.005	
81	Gross Alpha	PCi/ "	15	--	
82	Gross Beta	"	50	--	

Table 3

## Pesticide List -- National Interim Primary Drinking Water Regulations

No.	Name	Units	Reference Limit	Detection Limit
55	BHC	mg	0.004	0.00005
56	DDD	"	0.004	0.0001
57	DDE	"	0.004	0.0001
58	Oxychlordane	"	0.004	0.00004
59	Mirex	"	0.0002	0.0001
61	Aldrin	"	0.017	0.00004
62	Chlordane	"	0.003	0.0003
83	DDT	"	0.042	0.00015
64	Dieldrin	"	0.017	0.00006
65	Endrin	"	0.0002	0.00011
66	Heptachlor	"	0.018	0.00002
67	Heptachlor Epoxide	"	0.018	0.00004
68	Lindane	"	0.004	0.00002
69	Methoxychlor	"	0.1	0.0004
70	Malathion	"	0.1	0.0004
71	Parathion	"	0.1	0.0001
73	Chlorpyrifos	"	0.1	0.00006
74	Toxaphene	"	0.005	0.004
75	Diazinon	"	0.1	0.00026
76	Methyl Parathion	"	0.1	0.00015
78	2, 4 D	"	0.1	0.0038
79	Silvex	"	0.01	0.0005



1b. Each project officer for a water-related study should provide himself with drinking water data as part of his preparation. This Division will remain the manager for the DWQDB. Requests for retrievals will be handled informally (telephone or writing) by AEHA personnel at Autovon 584-3289/3554/3816. It will take approximately five working days for turn-around.

1c. As data are generated under this program of laboratory support for the National Interim Primary Drinking Water Regulations, they will be added to the DWQDB.

2. This Division is also preparing a published summary of the current DWQDB, showing for each source the mean range and number of operations for each parameter. (An example is shown as Appendix F.)

*Source of Additional Information*

Chief, Water Conservation Branch, Water Quality Engineering Division,  
AEHA

Surface Water Data Collected by Installation Personnel

Installation personnel maintain on-going water sampling and analysis programs, file monthly operating logs with command file headquarters, and file quarterly reports with regional EPA offices. These water quality monitoring programs involve frequent sampling of sites upstream, in the sewage treatment plant, and downstream from installation sewage treatment plants. Also, sites are periodically sampled downstream from washracks, at outfalls of storm sewer systems, at swimming pool influent and effluent sites, and at water impoundments. There are no ongoing monitoring programs for streams draining non-cantonment areas, such as field maneuver sites, and/or artillery impact zones.

Most major installations have one or more sewage treatment plants and analysis laboratories; collection and analysis of samples is commonly done by personnel in the FE's office. Reports may be filed by personnel within the Utilities Branch and/or the Environmental Branch. On a few installations, sample analysis is contracted to outside firms, and AEHA has helped some installations establish monitoring programs. Generally, however, the installations have personnel trained in collection and analysis.



### *National Pollutant Discharge Elimination System*

Since the passage of the 1972 Pollution Control Act, all facilities discharging into the nation's waterways are required (1) to obtain NPDES system permits from the EPA, and (2) to file quarterly reports of various water quality parameters. Military installations file copies of these quarterly NPDES reports with USEPA regional offices, the AEHA, and command headquarters, and a copy is retained in the Facilities Engineer's (FE) office. Although these reports are kept on permanent record at each filing station, they are retained only as paper copy, not on a computerized data storage system.

An installation may have several permits, one for each discharging source. A separate report is filed for each permit. The parameters measured and the frequency of sampling vary with the type of discharge as well as the particular characteristics of the receiving surface water and soil conditions. Some parameters are measured daily, some weekly, and others monthly. (For example, at Yakima Firing Center, where water supplies are obtained from wells, but effluent is discharged into the Yakima River, DO, pH, chlorine residual, and settleable solids are monitored daily; suspended solids, fecal coliform, and BOD are monitored weekly; and volatile acids and alkalinity are monitored monthly.) On the reporting form, minimum, maximum, and average readings are given for each parameter during the reporting interval, as well as required conditions of environmental quality established by the regional USEPA office.

#### *Example -- Fort Dix*

Fort Dix, NJ, which reports to the USEPA Region 2 office in New York City, has four permits: one for each of three swimming pools and one for the sewage treatment plant. Parameters measured at the pools are temperature, pH, suspended solids, oil and grease, flow, and chlorine-free residual. At the sewage treatment plant, measured parameters include: influent -- 5-day BOD, pH, suspended solids, settleable solids; effluent -- temperature, 5-day BOD, DO, pH, suspended solids, settleable solids, flow, free-chlorine residual, fecal coliform, oil and grease; and in system -- percent removal of BOD and percent removal of suspended solids. These reports list any levels that exceed permit limitations monthly and for the entire quarter; the reports also include plans for corrective action, if necessary.

#### *Example -- Fort Drum*

Fort Drum, NY, which also reports to USEPA Region 2 in New York City, has three permits: one for the sewage treatment plant, and one each for a tank washrack and a vehicle washrack. Parameters measured at the sewage treatment plant are: influent -- pH, 5-day BOD, suspended solids, settleable solids; effluent -- flow, pH, 5-day BOD, suspended

solids, settleable solids, residual chlorine, temperature, and fecal coliform; in system -- percent removed 5-day BOD and percent removed suspended solids. Parameters measured at the washracks include flow, pH, BOD, suspended solids, settleable solids, and oil and grease.

#### *Monthly Operating Logs*

In addition to filing quarterly reports for NPDES permits, installations file operating logs monthly with command headquarters. These reports are stored at command headquarters in paper form only. Essentially, these reports are analysis summaries of the daily-weekly samples taken by the sewage treatment plant operators at sites upstream, downstream, and in the treatment plant system.

Reporting forms vary by installation. Fort Rucker (TRADOC) uses DA Form 5-61, while Fort Sill (also TRADOC) uses DA Form 4247 and DA Form 4178. Other installations have printed their own forms. Collecting procedures also differ. Fort Stewart collects samples daily 5 miles above and 5 miles below the sewage treatment plant, first recording temperature and initial dissolved oxygen, and then running a 5-day BOD analysis on these samples. Fort Lewis, WA, samples daily for pH, DO, chlorine residual, suspended solids, fecal coliform, and 5-day BOD.

While the forms and procedures vary by installation, certain basic parameters are measured at all installations, such as: total flow, pH, BOD, suspended solids, nitrates, fecal coliform, dissolved oxygen, temperature, and oil and grease. Each parameter is reported on the log for each sample day, with the actual numerical value being reported, rather than statistical values.

#### State Sources

Since agencies in almost every state are now involved in cooperative arrangements with EPA's STORET, this system now has or will soon have available most surface and groundwater data being collected at the state level. Therefore, to obtain these data, STORET is the logical organization to contact first.

Upon request, STORET User Assistance personnel provide a list of current users, indicating code, agency name, address, person to contact, and phone number. A March 1978 listing was abbreviated to include only state agencies in the 16 states where the selected installations occur (see Table 4). At least one state agency was cooperating in all of these states.

Table 4  
State Agencies Using STORET  
(For States Containing Selected Installations\*)

State	Installation(s)	Cooperating Agency	Address	Phone
Alabama	McClellan, Rucker	Alabama Water Improvement Commission	Perry Hills Office Park/3815 Interstate Court Montgomery, AL 36109	205/227-3630
California	Ord, Hunter-Liggett	State of California Water Resources Control Board	State Water Resources/Resc. Bldg./1416 9th St. Sacramento, CA 95814	916/445-0775
Colorado	Carson	Colorado State Health Department Colorado Game, Fish and Park Division	4110 East 11th Ave./Denver, CO 80220 Dept. of Natural Resources/317 W. Prospect Fort Collins, CO 80521	303/388-6111 303/404-2836
Georgia	Benning, Stewart, Gordon	GA Environmental Protection Division Dept. of Natural Resources	270 Washington Street Atlanta, GA 30334	404/656-4703
Indiana	Jefferson Proving Ground	State of Indiana Board of Health	1130 W. Michigan St./Indianapolis, IN 46206	317/631-5483
Kansas	Riley	Kansas Dept. of Health and Environment	Bldg. 740/Forbes AFB/Topeka, KS 66620	913/296-3821
Kentucky	Knox, Campbell	Kentucky Department of Natural Resources and Environmental Protection	1031 Capitol Plaza Tower/Frankfort, KY 40501	502/564-3135
Louisiana	Polk	State of Louisiana, Dept. of Health State of Louisiana, Wildlife and Fish Division Louisiana Wildlife and Fisheries Commission/Division of Water Poll	Bureau of Environmental Health, State Office Bldg. P.O. Box 60603, New Orleans, LA 70150 P.O. Box 44095 Capitol Station/Baton Rouge, LA 70804 Drawer FC, University Station/Baton Rouge, LA 70803	504/527-5124 504/389-5309
New Jersey	Dix	New Jersey Department of Environmental Protection	209 E. State St./Trenton, NJ	609/292-7754
New Mexico	Bliss	State of New Mexico Environmental Improvement Agency State of New Mexico	P.O. Box 2348/Sante Fe, NM 87501 Water Quality Section/Perd Bldg./Room 515 Sante Fe, NM 87501	505/827-2373 505/827-2373
New York	Drum	New York State Dept. of Environmental Conservation	50 Wolfe Rd./Albany, NY 12201	518/457-7459
North Carolina	Bragg	North Carolina Dept. of Natural and Economic Resources	P.O. Box 27697/Raleigh, NC 27611	919/829-4740 Ext. 244
Oklahoma	Sill	State of Oklahoma Oklahoma State Health Dept.	P.O. Box 400/Chickasha, OK 73018 NE 10th and Stonewell Sts./Oklahoma City, OK 73105	405/231-4011 405/271-5246
Tennessee	Campbell	Tennessee Dept. of Public Health	Room 625 Cardell/Hull Bldg./6th Ave. N/Nashville, TN 37219	615/741-2275
Texas	Hood, Bliss	Texas Water Quality Board Dept. of Water Resources	Austin, TX	
Washington	Lewis, Yakima	State of Washington Dept. of Ecology Washington State Dept. Fisheries	P.O. Box 829/Olympia, Wash. 98504 115 General Administration Bldg./Olympia, Wash. 98504	206/753-2812 206/753-6623

\* List excerpted from a computer printout of STORET users provided 7 March 1978 by Ann DeTemple of STORET User Assistance. State agencies only were selected for this list, although there were many Regional and District Federal agencies, universities, counties, and other units which might logically have data relevant to selected installation (i.e., for Colorado, Ft. Carson - Pikes Peak Area of Government, 27 East Verillo, Springs, CO 80903, phone 303/471-7080, and Colorado State University Agriculture Experiment Station, P.O. Box 578, Sunnison, CO 81230.



Agencies cooperating with the STORET system were the major water collection agencies in each state. In some states other data-collecting agencies passed information through the cooperating agency (California and Texas). In some states where two or more agencies did significant collecting, each agency was a direct STORET user (Louisiana, Washington, Colorado). State agencies usually collect three types of data: (1) data from statewide monitoring stations, which usually consist of a variety of water quality parameters (also some flow data) on a monthly basis; (2) data from intensive studies (one or more annually) on a particular watershed for baseline data acquisition and for modeling purposes; and (3) data from compliance monitoring usually associated with NPDES permits at particular sites downstream from effluent sources. In most states, all of the statewide monitoring data go into STORET; there is often a processing lag, so there is a delay before current data reach the system. The data from intensive surveys are sometimes put into STORET; however, in many states, this aspect of the data storage program is inconsistent. Generally, compliance monitoring data collected by state agencies are not entered into STORET.

While STORET seems to be the logical source for state agency data, there are factors peculiar to each state. For example, in some states it is recommended that the agency itself be contacted as well as STORET. California's Water Quality Control Board enters all water quality information into STORET, but the State Water Resource Department which collects flow data has its own storage and retrieval system for such data and does not use STORET. The New York State Department of Environmental Conservation enters all statewide monitoring data into STORET, but reports problems with incorrect transfer of data. This agency does not enter its data directly into STORET; instead, it gives data to an EPA Regional Office and it is then entered into the system from this office. Thus, the New York Department of Environmental Conservation recommends that STORET users also directly contact their state environmental protection agency. However, most state agencies work directly with the STORET system, and most indicate that STORET has improved their data management systems and made information more readily accessible.

### 3 EXAMPLE DATA--HUNTER-LIGGETT MILITARY RESERVATION

Hunter-Liggett Military Reservation was selected as a model to examine the actual data available from EPA's STORET and USGS's WATSTORE storage and retrieval systems. Hunter-Liggett latitude and longitude coordinates were entered on both systems and a retrieval was made from current and historical sampling and gaging stations within these coordinates. These stations were then plotted on 1:250,000 USGS maps, and overlays were made to indicate the location of each station. Associated tables were also compiled, organized by watershed. The following sections discuss major watersheds (and sampling stations) at Hunter-Liggett, give information about the map, provide the data obtained from STORET, and present data obtained from the various WATSTORE data files. Data obtained from STORET and WATSTORE are not always in sufficient quantity for statistical analysis, but can be supplemented by information obtained by the installation's data-gathering program.

#### Hunter-Liggett Watersheds

The two major watersheds draining Hunter-Liggett Military Reservation are the San Antonio River and the Nacimiento River. Both rivers empty into the Salinas River, which flows northwest and drains into the Pacific Ocean near Monterey, CA.

The northern and eastern sections of the installation are drained by the San Antonio River and its tributaries. On the reservation, the river drains from the northwest to the southeast until it flows into the San Antonio Reservoir. The installation boundaries cut across this reservoir. At the reservoir, the river changes direction and flows northeast toward its confluence with the Salinas River.

A northwest-southeast running ridge separates the Nacimiento River watershed from the San Antonio River watershed. The Nacimiento and its tributaries drain the western areas of the installation, then flow into the Nacimiento Reservoir approximately 7 miles downstream from the installation. Waters draining this reservoir flow northeast into the Salinas River 4.5 miles upstream from the San Antonio-Salinas confluence.

All but two sampling stations listed in Table 5 are along the San Antonio and the Nacimiento watersheds. Station 1 (Redwood Gulch) is located on a small stream that drains only a tiny section along the eastern rim of the installation and runs directly into the Pacific. Station 6 is located on the Salinas River 6 miles downstream from the San Antonio River confluence and 10.5 miles downstream from the Nacimiento River confluence.

Table 5  
USGS and EPA

Station Code Number	Station Number* in Figure 1	Geographic Coordinates	River Miles From Confluence	Confluence
D3322550	2s	36° 00' 50" 121° 25' 10"	54.5m	Nacimiento - Salinas River
11148820	3g	35° 48' 50" 121° 05' 25"	30.0m	
11148800	2g-3s	35° 48' 06" 121° 06' 50"	29.3m	
11148900	4g	35° 47' 19" 121° 05' 34"	27.8m	
11149300	8g	35° 45' 29" 120° 53' 01"	11.0	
11149400	5g	35° 45' 41" 120° 51' 16"	9.8m	
111496500	6g	36° 01' 10" 121° 14' 15"	36.6m	San Antonio - Salinas River
D3230000	9s	35° 57' 30" 121° 11' 24"	30.0m	
11149700	7g-5s	35° 54' 45" 121° 07' 50"	25.5m	
11149900	9g-4s	35° 53' 48" 121° 05' 14"	23.0m	
D3221500	8s 121° 05' 12"	35° 53' 48"	22.5m	
D3220000	7s 120° 59' 30"	35° 51' 54"	16.8m	
11150000	10g 120° 59' 30"	35° 51' 55"	15.2m	
1150020	11g	35° 50' 35" 120° 57' 45"	12.0m	San Antonio- Salinas River
11150100	12g	35° 47' 55" 120° 53' 02"	7.5m	
D2185000	6s	35° 55' 42" 120° 52' 00"		Station is on Salinas River
11142600	1g	35° 50' 12" 121° 23' 25"	.75m	Station is on Redwood Gulch .75m. from ocean confluence

\* Stations identified as "s" are listed with STORET; stations identified as "g" are listed with USGS, and stations identified with both "s" and "g" are listed with both sources.



### Stream Gauging Stations and Water Quality Sampling Stations

Most of the stream flow gaging and water quality sampling stations in the Hunter-Liggett area are installed and operated by the USGS at the request of Monterey County, San Luis Obispo County, or the California Department of Agriculture. Most of the discharge and stage information is used for flood control and irrigation purposes. The area is under the jurisdiction of the Menlo Park subdistrict of the USGS.

State and local users are eligible for 50 percent Federal assistance on USGS installation and operation fees, but Federal agencies and facilities must pay 100 percent of these costs. Installing a flow and discharge gaging station may cost \$5000 or more, and operation fees average \$3000 per year. However, these figures vary widely. Installation and operation of water quality sampling sites are even more variable, depending largely on what parameters are measured and on the interval between data collections. In an area such as Hunter-Liggett where most surface drainage is intermittent, special storm-oriented collection programs are needed. However, it may be possible for installation personnel to collect the data and thus reduce costs. It may also be possible to request that additional parameters be measured at an existing station if the current location is suitable.

### The Overlay Maps

The sources for the Hunter-Liggett map were "Santa Cruz" and "San Luis Obispo," both USGS 1:250,000 scale topographic maps. The Hunter-Liggett map was drawn one-to-one with the source maps. Because the boundary of the two USGS maps runs along the 36° latitude, and Hunter-Liggett extends both north and south of this latitude, it was necessary to position source map borders flush to produce a map in which the installation boundaries were continuous.

Seventeen sampling sites are identified in Figure 1, which provides minimum information on surface drainage. The 1:250,000 scale maps were chosen for manageability since twelve 7.5-minute maps are required to cover the entire installation. However, drainage information is highly generalized at this small scale; therefore, it may be useful to locate sampling sites on larger-scale maps using the coordinates given in Table 5.

### EPA STORET Data

State and county codes (both Monterey and San Luis Obispo) (see Table 5) were entered onto STORET by remote terminal to retrieve all available data. From the output, sampling sites relevant to the Hunter-

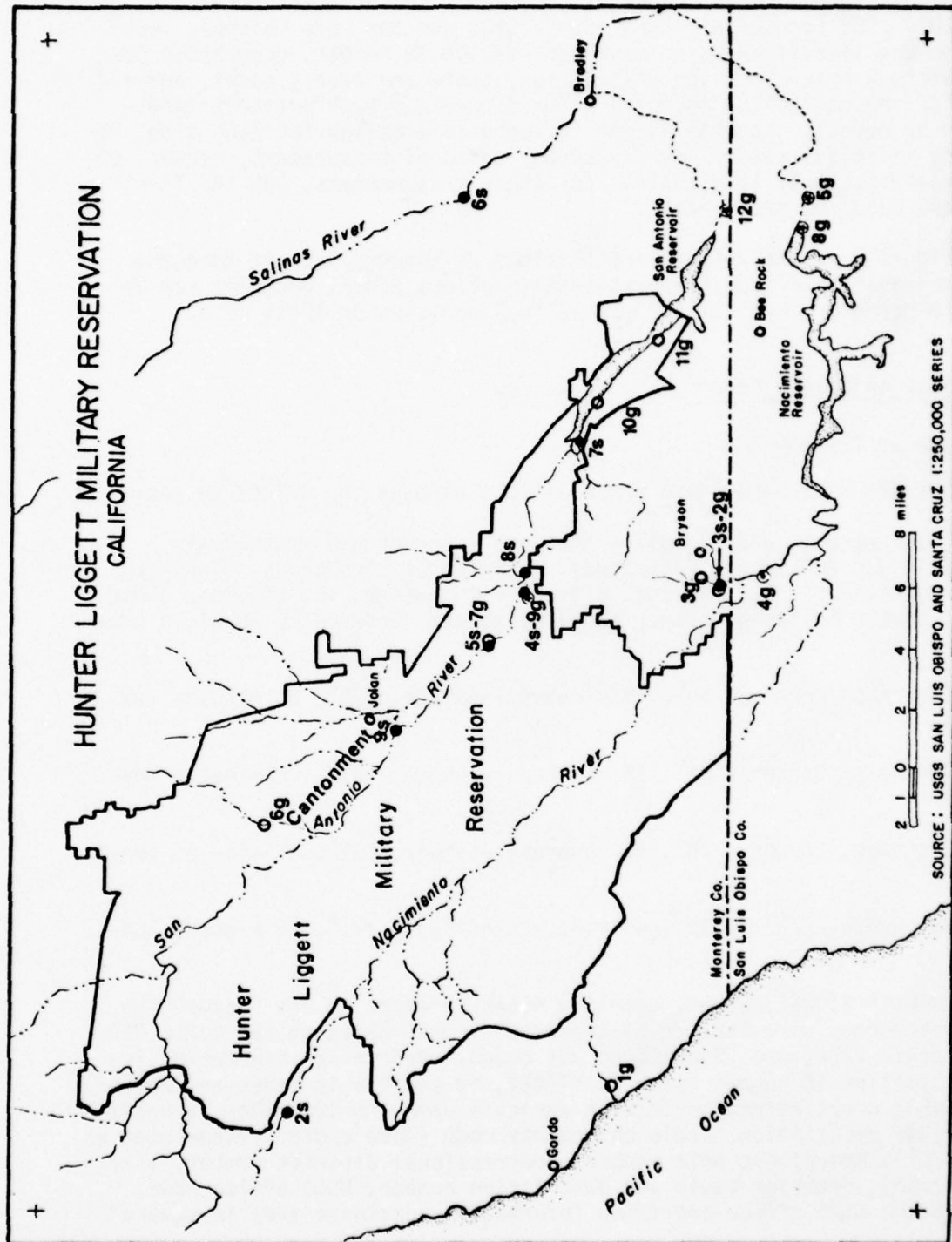


Figure 1. Hunter-Liggett surface drainage and cantonment areas.



Liggett watersheds were located by geographic coordinates on the 1:250,000 USGS topographic maps (Santa Cruz and San Luis Obispo). Each station was identified by an assigned station ID number, geographic coordinates, a brief location description, state and county codes, and a code for the collecting agencies (STORET *User Handbook* provides information on codes). Station output includes information for each site, including which parameters were measured, units of measurement, numbers of measurements, statistical values for these measurements, and the first and last dates of measurement.

Figure 2 is the output from Stations 2s through 9s. If adequate data are available from these stations, various STORET programs can be used to perform graphical and statistical analyses on these data.

#### USGS Station Header File

##### *Stations 1g Through 12g*

Not all USGS water data are available through the STORET system.

There were 12 USGS sampling stations (current and historical) listed in Hunter-Liggett watersheds. Only three were cross-referenced with STORET. The USGS regional office in Champaign, IL, provided these data, and the following corner coordinates were entered to retrieve sampling sites.

Southeast Corner - 35<sup>0</sup>, 45 minutes latitude, 120<sup>0</sup>, 50 minutes longitude.

Northeast Corner - 36<sup>0</sup>, 15 minutes latitude, 121<sup>0</sup>, 00 minutes longitude.

Northwest Corner - 36<sup>0</sup>, 10 minutes latitude, 121<sup>0</sup>, 28 minutes longitude.

Southwest Corner - 35<sup>0</sup>, 45 minutes latitude, 121<sup>0</sup>, 28 minutes longitude.

As with STORET output, sampling sites relevant to the Hunter-Liggett watersheds were located by geographic coordinates on the 1:250,000 topographic maps, and USGS output was coded. Retrieved information includes station ID number (same as STORET, if station is cross-referenced), geographic coordinates, collecting agency's name and ID number, a brief geographic description, state and county code (same coding system used as in STORET), hydrologic unit number, congressional district number, site type symbol, drainage basin and description number, USGS office code, city of the USGS office providing information, drainage area in square

STORET LATE 77/04/25

/TYP/AMNT/STREAM

03230000  
35 57 30.0 121 11 24.0 2  
SAN ANTONIO RIVER NEAR JOLON  
06053 CALIFORNIA  
CENTRAL COASTAL AREA  
UPPER SALINAS RIVER  
21CAL-1 760827 04001004  
0000 CLASS 00

PARAMETER	TEMP	CENT	NUMBER	MEAN	VARIANCE	STAN DEV	COEF VAR	STAND ER	MAXIMUM	MINIMUM	BEG DATE	END DATE
00010 WATER		CENT	4	18.1250	21.4898	4.63571	.255764	2.31786	24.2000	13.5000	74/09/18	75/10/28
00300 DO		MG/L	4	9.12500	.669271	.818090	.089654	.409045	10.1000	8.10000	74/09/18	75/10/28
00310 BOD	5 DAY	MG/L	3	9.66666	.043334	.208167	.215345	.120185	1.20000	.800000	74/11/19	75/10/28
00940 CHLORIDE	CL	MG/L	2	7.00000	13.5200	3.67696	.525279	2.60000	9.60000	4.40000	74/09/18	74/11/19

Figure 2. Output from Stations 2s through 9s.

STRET CAT 17/04/25

11148800  
35 48 06.0 121 06 50.0 2  
NACIMIENTO R NR BRYSON CALIF  
06053 CALIFORNIA 140491

/TYP/AMRNT/STREAM

112MRD 0000 CLASS 00 04001004

PARAMETER  
00010 WATER  
00060 STREAM

TEMP  
FLCM

CENT  
CFS

NUMBER  
9  
17

MEAN  
10.4889  
690.041

VARIANCE  
5.43869  
606815

STAN DEV  
2.33210  
778.855

COEF VAR  
.222340  
1.12871

VAR  
-777367  
188.900

STAND ER  
15.0000  
2140.00

MINIMUM  
7.90000  
-000000

MAXIMUM  
65/11/17  
63/10/20

BEG DATE  
65/11/17  
63/10/20

END DATE  
67/03/31  
70/10/08

Figure 2 (Con't)

STORET DATE 77/04/25

11149900  
35 53 48.0 121 05 14.0 2  
SAN ANTONIO RIVER NEAR LOCKWOOD  
06053 CALIFORNIA 140491

/TYPE/ANALYT/STREAM

112MRD 04001004  
0000 CLASS 00

PARAMETER	MEAN	VARIANCE	STAN DEV	COEF VAR	STAND ER	MAXIMUM	MINIMUM	BEG DATE	END DATE
00010 WATER	14.2088	27.7853	5.27117	.370978	.558743	28.0000	5.50000	65/11/23	76/05/06
00060 STREAM	39 1490.81	5438904	2332.15	1.56435	373.442	9260.00	.000000	65/11/23	71/06/02

Figure 2 (Con't)



STURET DATE 77/04/25		11149700		35 54 45.0 121 07 50.0 2		SAN ANTONIO R AT SAM JMS RR NR L		06053 CALIFORNIA		140491			
/TYPE/AMNT/STREAM		112MRD		0000		CLASS 00		04001004					
PARAMETER	TEMP	FLCM	CEMT	NUMBER	MEAN	VARIANCE	STAN DEV	COEF VAR	STAND ER	MAXIMUM	MINIMUM	BEG DATE	END DATE
00010 WATER				58	15.0516	32.9324	5.73867	.381265	.753525	28.9000	6.10000	59/01/09	65/01/07
00060 STREAM				70	1118.55	5037412	2244.42	2.00654	268.259	12400.0	1.00000	59/01/09	65/01/07

Figure 2 (Con't)

STORET DATE 77/04/25

/TYPE/ANALYT/STREAM

D2185000  
35 55 42.0 120 52 00.0 2  
SALINAS RIVER NEAR BRADLEY  
06053 CALIFORNIA  
CENTRAL COASTAL AREA  
LOWER SALINAS RIVER  
21CAL-1 760827 04001004  
0000 CLASS 00

PARAMETER	TEMP	CL	CONC	MG/L	NUMBER	MEAN	VARIANCE	STAN DEV	COEF VAR	STAND ER	MAXIMUM	MINIMUM	BEG DATE	END DATE
00110 WATER					9	16.0111	15.0137	3.87475	.242004	1.29158	21.0000	10.0000	74/07/09	76/09/20
00300					120	9.60077	2.74609	1.65713	.172604	.151275	14.7000	5.60000	58/07/24	76/09/20
00940 CONC					119	19.0344	189.869	13.7793	.723914	1.26314	54.0000	1.40000	58/07/24	76/09/20

Figure 2 (Con't)

STORET DATE 7/10/25

/TYPE/ANALYT/STREAM

03220000  
 35 51 54.0 120 59 30.0 2  
 SAN ANTONIO RIVER AT PLEYTO  
 06053 CALIFORNIA  
 CENTRAL COASTAL AREA  
 UPPER SALINAS RIVER  
 21CAL-1 760827 04001004  
 0000 CLASS 00

PARAMETER	MEAN	VARIANCE	STAN DEV	COEF VAR	STAND ER	MAXIMUM	MINIMUM	BEG DATE	END DATE
00010 WATER	16.3167	18.8617	4.34300	.266170	1.77302	21.4000	9.50000	74/09/18	76/05/03
00300 DO	8.68418	5.56604	2.35755	.271476	.382445	13.2000	3.00000	58/10/18	76/05/03
00310 HCL	1.73333	.103334	.321457	.185456	.185593	2.10000	1.50000	74/11/19	75/10/28
00940 CHLORIDE	14.2478	37.6165	6.13323	.430468	.904295	35.0000	5.00000	54/02/02	76/05/03

Figure 2 (Con't)

STOPT	DATE	77/04/25										
			03221500									
			35 53 48.0 121 05 12.0 2									
			SAN ANTONIO RIVER NEAR LOCKWOOD									
			06053 CALIFORNIA									
			CENTRAL COASTAL AREA									
			UPPER SALINAS RIVER									
			2ICAL-1 760827 04001004									
			0000 CLASS 00									
PARAMETER	TEMP	CEMT	NUMBER	MEAN	VARIANCE	STAN DEV	COEF VAR	STAND ER	MAXIMUM	MINIMUM	RES DATE	END DATE
00010 WATER		CEMT	3	20.0000	79.0000	8.88819	.444410	5.13160	27.0000	10.0000	74/07/09	75/05/27
00300 UJ		MG/L	5	9.85999	2.42816	1.55826	.158038	.696873	11.6000	7.50000	74/03/11	75/05/27
03940 CHEMIDE	CL	MG/L	5	9.72000	5.56708	2.35947	.242743	1.05518	12.0000	7.10000	74/03/11	75/05/27

Figure 2 (Con't)



STORET DATE 77/04/25

/TTPA/AMB/T/STREAM

03322550  
36 00 50.0 121 25 10.0 2  
NACIMIENTO RIVER NEAR JOLON  
06053 CALIFORNIA  
CENTRAL COASTAL AREA  
UPPER SALINAS RIVER  
21CAL-1 760827 04C01004  
0000 CLASS 00

PARAMETER	TEMP	CONC	NUMBER	MEAN	VARIANCE	STAN DEV	COEF	VAR	STAND ER	MAXIMUM	MINIMUM	BEG DATE	END DATE
00013 WATER		MG/L	4	13.6250	29.6427	5.44451	.399597	2.72225	21.4000	8.80000	74/09/18	75/10/28	
00300 DO		MG/L	4	9.72499	.975911	.987882	.101582	.493941	10.9000	8.50000	74/09/18	75/10/28	
00310 PCU	5	MG/L	3	.866666	.043334	.208168	.240194	.120186	1.10000	.700000	74/11/19	75/10/28	
00940 CHLORIDE	CL	MG/L	2	11.1500	16.2452	4.03053	.361483	2.85002	14.0000	8.30000	74/09/18	74/11/19	

Figure 2 (Con't)

miles, and a date for the last file update. Information about the type of data available from different collection periods is provided, but not the data itself. Table 6 lists each USGS station and summarizes the data type collected and the period of collection. Figure 3 provides an example of the actual computer output for Station 1g.

#### USGS Daily Flow Values -- 1976, Stations 4g, 5g, and 9g-5s

The Champaign, IL, USGS office supplied the daily flow values for the sampling and gaging stations active in 1976. (The period of records actually runs from October 1, 1975 to September 30, 1976.) Two parameters were measured for each of the three stations. Code 00060 is amount discharged in cubic feet per second, and Code 00065 is the stream stage in feet.

The flow to Station 4g (see Figure 4) on the Nacimiento Watershed, approximately 2 miles downstream from the installation boundary is intermittent; there was no recorded discharge from mid-June through most of September.

Flow to Station 9g-4s (see Figure 5) on the San Antonio Watershed, which is within installation boundaries, is also intermittent, with flow recorded only from mid-December to mid-May. (A listing of 0.000 means that there is no measurable discharge or stage data. A listing of 9999999 indicates that these data were not measured.

Station 5g (see Figure 6) downstream from the Nacimiento Reservoir has perennial flow which varied from 3.800 cu ft/sec on 21 December 1975 to 582.000 cu ft/sec on 14-16 July 1976. The relatively high discharge at Station 5g during the dry, late spring and summer months is caused by the release of waters from the reservoir.

#### USGS Water Quality File -- Stations 4g and 9g-4s, 1976

USGS water quality data were available in 1976 for only two stations: 4g on the Nacimiento watershed and 9g-4s on the San Antonio watershed. Data are listed in Figure 7 by the date of sampling and by each parameter sampled. These data were obtained through the Champaign, IL, USGS office at the same time as the USGS daily flow values.

Table 6  
USGS Stations -- Period of Activity

Station No.	Overlay Map No.	Type of Data	When Active		Active Now
			Begun	Ended	
11142600	1g	SW	1960	1973	no
11148800	2g,3s	SW QW Phy.	1955 1958	1971 1971	no
11148820	3g	SW	1960	1973	no
11148900	4g	SW QW Phy.	1971 1971	---- ----	yes
11149300	8g	SW	1957	----	yes
11149400	5g	SW QW Phy.	1957 1962	---- 1966	yes
11149650	6g	SW	1960	1973	no
11149700	7g,5s	SW QW Phy.	1958 1958	1965 1965	no
11149900	9g,4s	SW QW Phy.	1965 1965	----	yes
11150000	10g	SW QW Phy.	1922 1961	1965 1965	no
11150020	11g	SW	1961	1965	no
11150100	12g	SW	1965	----	yes

Key: SW - surface water parameters flow data  
 QW - water quality parameters  
 Phy - physical parameters

1g.

NAWDEX ID# \* USGS 11142600  
LATITUDE \* 35 50 12  
LONGITUDE \* 121 23 25  
NAWDEX AGCY \* USGS  
AGCY-STA-NO \* 11142600  
STATION NAME \* REDWOOD GULCH NR JOLON-CALIF

STATE \* 6 *(California)*  
COUNTY \* 53 *(Monterey)*

HYDROL - UNIT \* 180771 G *(This number is a combination of the USGS  
Water Resource Division's 1. Region Code 2. Subregion Code  
3. Map Number and 4. Map Letter.*

CONG DIST \* 12 *(Federal Congressional district in which station  
occurs)*

SITE TYPE \* SW *(Stream)*  
BASW DESCRP \* 4 *(Natural)*  
WDSD - OFC - CODE \* 06 *(Water Data Source Directory [WDSD] is a  
NAWDEX Agency Directory File. Each cooperating agency is assigned  
a file no.*

CITY \* 2140

DRAIN - AREA \* 1.31 *(Square miles)*

LAST UPDATE \* 06/12/1976 *(last update of the NAWDEX file)*

STATE - COUNTY \* 6053

SW-BEGIN-YR \* 1960 *(date data collection began)*  
SW-END-YR \* 1973 *(date data collection terminated)*  
SW-OWDC-NO \* 00844 *(Office of Water Data Coordination - USGS -  
File or code number)*  
SW-OWDC-SEQ \* 1828980000000 *(OWDC sequence number within a  
particular file)*  
COMPLETE STAGE \* E *(activity eliminated, SW data is no longer  
being collected at this site)*  
STAGE MED (media) \* D *(Stage data collected is stored on  
computer and published)*  
PEAK - FLOW \* 9 *(collection interval was non-specific)*  
FLOW - MED (media) \* D *(stage data collected is stored on computer  
tape and published)*  
SW - OTHER - 578 *(supplementary data 5 = cross section, 7 = flood  
frequency, 8 = coefficient of roughness)*

Figure 3. Example computer output for Station 1g.  
(Italicized copy is explanatory information and is  
not part of output.)



SW - PURPOSE \* R (Research/special study)  
SW - ACTIVE \* N (not active)  
WRD PROJ NO \* CA001 (number assigned by USGS Water Resources  
Division - WRD, number indicates location CA - California, and  
type of station 001 - surface water)

CUSTOMER NUM \* CA76 (number refers to California [CA] and water  
year 1976 [76]).

PERCENTAGE \* 50 (% funding that cooperating organization provides as  
a part of the total cost of operating this station)

DISCIPLINE \* SW (surface water)

CUSTOMER NUM \* 0024 (code number of USGS Federal funding)

PERCENTAGE \* 50 (% funding supplied by USGS)

DISCIPLINE \* SW (surface water)

To interpret the computer printout supplied by USGS from the WATSTORE  
Station Header File, it is necessary to obtain coding keys from the  
NAWDEX office on the cooperating USGS Water Resources Division Office.

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\*Federal Information Processing Stations (FIPS) numeric state and county  
codes are used by both EPA STORET and USGS NAWDEX. These codes are  
published in FIPS Pub. 6-2, GSA, Office of Finance.

Figure 3 (Con't)

FILE TYPE	STATE AGENCY CODE	STATION IDENTIFICATION NUMBER	CROSS SECTION	SAMPLING DEPTH	PARA-METER CODE	STAT YEAR	STAT CODE	VALU INDICATOR	DIST CODE	COUNTY CODE	DRAINAGE AREA	CONTRIB. DRAINAGE AREA
R	05	USGS	11144900		00060	1976	00003	999999.0000	06	079	156.00	
STATION NAME OR LOCAL WELL NUMBER												
NACIMIENTO R BEL SAPAQUE C NR BRYSON CALIF												
DAY	10	11	12	01	02	03	04	05	06	07	08	09
1	0.000	4.400	4.400	5.200	4.400	312.000	9.900	8.400	0.800	0.000	0.000	0.000
2	0.000	3.500	4.700	5.000	4.400	217.000	9.900	8.100	0.710	0.000	0.000	0.000
3	0.000	2.900	5.000	5.000	4.400	246.000	10.000	7.300	0.620	0.000	0.000	0.000
4	0.000	2.400	5.000	5.000	4.200	120.000	11.000	6.900	0.540	0.000	0.000	0.000
5	0.000	2.600	5.000	5.200	5.200	82.000	13.000	6.900	0.370	0.000	0.000	0.000
6	0.000	2.400	5.200	5.200	6.700	64.000	13.000	6.500	0.320	0.000	0.000	0.000
7	0.000	2.200	5.200	5.500	9.600	54.000	13.000	6.900	0.280	0.000	0.000	0.000
8	0.000	2.200	5.200	5.500	20.000	46.000	19.000	6.500	0.210	0.000	0.000	0.000
9	0.000	2.100	5.200	5.500	152.000	41.000	30.000	6.100	0.190	0.000	0.000	0.000
10	0.040	2.000	5.200	5.500	84.000	37.000	25.000	5.400	0.250	0.000	0.000	0.000
11	0.050	2.000	5.200	5.500	35.000	34.000	38.000	5.100	0.330	0.000	0.000	0.000
12	0.000	2.000	5.200	5.500	22.000	31.000	34.000	4.700	0.340	0.000	0.000	0.000
13	0.000	2.200	5.200	5.500	18.000	27.000	28.000	4.100	0.360	0.000	0.000	0.000
14	0.000	2.400	5.500	5.800	15.000	25.000	26.000	3.600	0.310	0.000	0.000	0.000
15	0.000	2.600	5.200	5.800	12.000	23.000	22.000	3.100	0.260	0.000	0.000	0.000
16	0.000	2.800	5.500	5.800	10.000	22.000	20.000	2.700	0.130	0.000	0.000	0.000
17	0.000	3.100	5.800	5.800	9.500	21.000	18.000	2.300	0.100	0.000	0.000	0.000
18	0.000	3.300	5.800	5.500	8.800	19.000	18.000	2.400	0.050	0.000	0.000	0.000
19	0.000	3.300	5.800	5.500	8.400	18.000	16.000	2.300	0.020	0.000	0.000	0.000
20	0.000	3.800	5.800	5.200	7.700	16.000	16.000	2.100	0.000	0.000	0.000	0.000
21	0.000	4.200	5.800	5.000	7.300	16.000	14.000	1.900	0.000	0.000	0.000	0.000
22	0.000	4.200	5.800	5.000	6.700	15.000	14.000	1.900	0.000	0.000	0.000	0.000
23	0.000	4.400	5.500	5.000	6.400	15.000	13.000	1.900	0.000	0.000	0.000	0.000
24	0.000	4.700	5.500	4.700	6.100	14.000	13.000	1.700	0.000	0.000	0.000	0.000
25	0.000	4.700	5.500	4.700	6.100	13.000	11.000	1.700	0.000	0.000	0.000	0.000
26	0.000	5.000	5.500	4.700	5.800	13.000	10.000	1.600	0.000	0.000	0.000	0.000
27	0.000	5.000	5.500	4.700	5.800	12.000	9.900	1.400	0.000	0.000	0.000	0.000
28	0.000	4.400	5.800	4.700	5.500	11.000	9.500	1.300	0.000	0.000	0.000	0.000
29	0.000	4.200	5.500	4.700	9.200	11.000	9.500	1.000	0.000	0.000	0.000	0.000
30	0.070	4.200	5.500	4.400	999999	11.000	9.000	1.000	0.000	0.000	0.000	0.200
31	1.800	999999	5.200	4.400	999999	11.000	999999	0.910	999999	0.000	0.000	999999

Figure 4. Data from Station 4g.

FILE TYPE	STATION AGENCY CODE	STATION IDENTIFICATION NUMBER	CROSS SECTION	SAMPLING DEPTH	PARA-METER CODE	STAT YEAR CODE	NO VALUE INDICATOR	DIST COUNTY CODE	DRAINAGE AREA	CONTRIBUTOR DRAINAGE AREA
R	06	USGS	11148900		00065	1976 00012	999999.0000	06 079	156.00	
STATION NAME OR LOCAL WELL NUMBER										
NACIMIENTO R REL SAPAQUE C NR BRYSON CALIF										
DAY	10	11	12	01	02	03	04	05	06	07 08 09
1	7.520	8.410	8.430	8.450	8.410	999999	8.460	8.420	8.130	7.370 999999 999999
2	7.520	8.370	8.460	8.440	8.410	9.850	8.460	8.410	8.120	7.350 999999 999999
3	7.530	8.330	8.450	8.440	8.410	9.960	8.470	8.390	8.110	7.320 999999 999999
4	7.530	8.310	8.450	8.440	8.400	9.410	8.490	8.360	8.100	7.300 999999 999999
5	7.530	8.300	8.450	8.450	8.440	9.190	8.510	8.380	8.070	7.280 999999 999999
6	7.530	8.290	8.460	8.450	8.490	9.060	8.510	8.370	8.070	7.250 999999 999999
7	7.550	8.280	8.460	8.450	8.570	8.980	8.510	8.380	8.060	7.220 999999 6.940
8	7.560	8.240	8.460	8.450	8.760	8.910	8.620	8.370	8.040	7.190 999999 6.990
9	7.510	8.270	8.460	8.450	8.630	8.870	8.780	8.360	8.040	7.160 999999 6.960
10	999999	8.270	8.460	8.450	9.300	8.830	8.710	8.340	8.050	7.120 999999 7.050
11	999999	8.270	8.460	8.450	8.940	8.790	8.840	8.330	8.070	7.090 999999 7.340
12	7.940	8.270	8.460	8.450	8.800	8.760	8.790	8.320	8.070	7.070 999999 7.360
13	7.910	8.290	8.460	8.450	8.730	8.720	8.730	8.300	8.070	7.050 999999 7.340
14	7.900	8.300	8.460	8.460	8.680	8.690	8.700	8.280	8.060	999999 7.320
15	7.890	8.310	8.450	8.460	8.630	8.670	8.660	8.260	8.050	999999 7.290
16	7.880	8.330	8.460	8.460	8.590	8.660	8.620	8.240	8.020	999999 7.290
17	7.880	8.350	8.470	8.460	8.570	8.640	8.600	8.220	8.010	999999 7.320
18	7.870	8.360	8.470	8.450	8.550	8.610	8.590	8.230	7.980	999999 7.320
19	7.870	8.360	8.470	999999	8.540	8.590	8.570	8.220	7.960	999999 7.310
20	7.870	8.380	8.470	8.440	8.520	8.570	8.560	8.210	7.930	999999 7.290
21	7.870	8.400	8.470	8.430	8.510	8.560	8.540	8.210	7.910	999999 7.300
22	7.860	8.410	8.470	8.430	8.490	8.550	8.530	8.210	7.880	999999 7.290
23	7.850	8.420	8.460	8.430	8.480	8.550	8.510	8.210	7.850	999999 7.270
24	7.850	8.430	8.460	8.420	8.470	8.530	8.500	8.200	7.800	999999 7.250
25	7.870	8.430	8.460	8.420	8.470	8.520	8.480	8.200	7.740	999999 7.250
26	7.890	8.440	8.460	8.420	8.460	8.510	8.460	8.190	7.670	999999 7.240
27	7.920	8.440	8.460	8.420	8.460	8.500	8.450	8.180	7.610	999999 7.270
28	7.920	8.430	8.470	8.420	8.450	8.490	8.440	8.170	7.530	999999 7.410
29	7.930	8.420	8.460	8.420	8.560	8.490	8.440	8.150	7.460	999999 8.140
30	999999	8.420	8.460	8.410	999999	8.490	8.430	8.150	7.400	999999 8.030
31	8.270	999999	8.450	8.410	999999	8.480	999999	8.140	999999	999999 999999

Figure 4 (Con't)

FILE TYPE	STATE AGENCY CODE	STATION IDENTIFICATION NUMBER	CROSS SECTION	SAMPLING DEPTH	PARAMETER CODE	YEAR	STAT CODE	NO VALUE INDICATOR	DIST CODE	COUNTY CODE	DRAINAGE AREA	CONTRIB. DRAINAGE AREA
R	06	USGS	11149900		00060	1976	00003	999999.0000	06	053	223.00	
STATION NAME OR LOCAL WELL NUMBER												
SAN ANTONIO RIVER NEAR LOCKWOOD CALIF												
DAY	10	11	12	01	02	03	04	05	06	07	08	09
1	0.000	0.000	0.000	4.600	5.400	54.000	6.700	3.100	0.000	0.000	0.000	0.000
2	0.000	0.000	0.000	5.100	5.400	54.000	6.700	2.700	0.000	0.000	0.000	0.000
3	0.000	0.000	0.000	4.500	4.900	51.000	7.400	2.100	0.000	0.000	0.000	0.000
4	0.000	0.000	0.000	3.700	4.900	45.000	7.400	1.800	0.000	0.000	0.000	0.000
5	0.000	0.000	0.000	3.900	5.400	37.000	6.700	1.800	0.000	0.000	0.000	0.000
6	0.000	0.000	0.000	3.900	6.700	32.000	6.700	2.100	0.000	0.000	0.000	0.000
7	0.000	0.000	0.000	3.900	6.700	28.000	6.700	1.800	0.000	0.000	0.000	0.000
8	0.000	0.000	0.000	4.000	15.000	26.000	9.900	1.600	0.000	0.000	0.000	0.000
9	0.000	0.000	0.000	4.200	33.000	23.000	12.000	1.400	0.000	0.000	0.000	0.000
10	0.000	0.000	0.000	4.200	43.000	23.000	17.000	1.100	0.000	0.000	0.000	0.000
11	0.000	0.000	0.000	3.900	32.000	21.000	17.000	0.770	0.000	0.000	0.000	0.000
12	0.000	0.000	1.500	4.100	27.000	19.000	19.000	0.470	0.000	0.000	0.000	0.000
13	0.000	0.000	1.400	4.100	23.000	18.000	18.000	0.220	0.000	0.000	0.000	0.000
14	0.000	0.000	1.200	3.900	21.000	18.000	15.000	0.040	0.000	0.000	0.000	0.000
15	0.000	0.000	1.300	4.000	19.000	15.000	13.400	0.000	0.000	0.000	0.000	0.000
16	0.000	0.000	1.500	4.200	18.000	14.000	12.000	0.000	0.000	0.000	0.000	0.000
17	0.000	0.000	1.700	4.200	15.000	13.000	9.900	0.000	0.000	0.000	0.000	0.000
18	0.000	0.000	1.900	4.400	14.000	13.000	9.000	0.000	0.000	0.000	0.000	0.000
19	0.000	0.000	2.100	4.400	12.000	11.000	8.200	0.000	0.000	0.000	0.000	0.000
20	0.000	0.000	2.100	3.900	13.000	9.900	8.200	0.000	0.000	0.000	0.000	0.000
21	0.000	0.000	2.600	3.900	13.000	9.000	7.400	0.000	0.000	0.000	0.000	0.000
22	0.000	0.000	2.600	4.400	9.900	9.000	6.700	0.000	0.000	0.000	0.000	0.000
23	0.000	0.000	2.600	4.400	9.000	7.400	6.700	0.000	0.000	0.000	0.000	0.000
24	0.000	0.000	2.600	4.400	9.000	7.400	6.000	0.000	0.000	0.000	0.000	0.000
25	0.000	0.000	2.700	3.900	8.200	7.400	5.400	0.000	0.000	0.000	0.000	0.000
26	0.000	0.000	2.700	3.900	8.200	7.400	4.900	0.000	0.000	0.000	0.000	0.000
27	0.000	0.000	2.700	3.900	7.400	6.700	4.900	0.000	0.000	0.000	0.000	0.000
28	0.000	0.000	3.000	4.400	8.200	7.400	4.400	0.000	0.000	0.000	0.000	0.000
29	0.000	0.000	3.300	4.900	9.9999	7.400	3.900	0.000	0.000	0.000	0.000	0.000
30	0.000	0.000	3.500	4.400	9.9999	7.400	3.500	0.000	0.000	0.000	0.000	0.000
31	0.000	999999	4.200	4.900	999999	6.700	999999	0.000	999999	0.000	0.000	999999

Figure 5. Data from Station 9g-4s.



FILE TYPE	STATE CODE	AGENCY CODE	STATION IDENTIFICATION NUMBER	CROSS SECTION	SAMPLING DEPTH	PARA-METER	YEAR	STAT CODE	NO VALU INDICATOR	DIST COUNTY CODE	DRAINAGE AREA	CONTRIB. DRAINAGE AREA
R	04	USGS	11149900			00065	1976	00012	999999.0000	06	053	223.00
STATION NAME OR LOCAL WELL NUMBER												
SAN ANTONIO RIVER NEAR LOCKWOOD CALIF												
DAY	10	11	12	01	02	03	04	05	06	07	08	09
1	999999	999999	999999	999999	5.000	5.360	4.980	4.910	4.640	999999	999999	999999
2	999999	999999	999999	999999	5.000	5.360	4.980	4.900	4.640	999999	999999	999999
3	999999	999999	999999	999999	4.990	5.340	4.990	4.880	4.640	999999	999999	999999
4	999999	999999	999999	999999	4.990	5.300	4.990	4.870	999999	999999	999999	999999
5	999999	999999	999999	999999	5.000	5.250	4.980	4.870	999999	999999	999999	999999
6	999999	999999	999999	999999	5.020	5.210	4.980	4.880	999999	999999	999999	999999
7	999999	999999	999999	999999	5.020	5.180	4.980	4.870	999999	999999	999999	999999
8	999999	999999	999999	999999	5.100	5.160	5.020	4.860	999999	999999	999999	999999
9	999999	999999	999999	999999	5.230	5.130	5.040	4.850	999999	999999	999999	999999
10	999999	999999	999999	999999	5.290	5.130	5.080	4.830	999999	999999	999999	999999
11	999999	999999	999999	999999	5.210	5.110	5.080	4.810	999999	999999	999999	999999
12	999999	999999	999999	999999	5.170	5.100	5.100	4.780	999999	999999	999999	999999
13	999999	999999	999999	999999	5.130	5.090	5.090	4.740	999999	999999	999999	999999
14	999999	999999	999999	999999	5.110	5.090	5.070	4.680	999999	999999	999999	999999
15	999999	999999	999999	999999	5.100	5.070	5.050	4.640	999999	999999	999999	999999
16	999999	999999	999999	999999	5.090	5.060	5.040	4.640	999999	999999	999999	999999
17	999999	999999	999999	999999	5.070	5.050	5.020	4.640	999999	999999	999999	999999
18	999999	999999	999999	999999	5.060	5.050	5.010	4.640	999999	999999	999999	999999
19	999999	999999	999999	999999	5.040	5.030	5.000	4.640	999999	999999	999999	999999
20	999999	999999	999999	999999	5.050	5.020	5.000	4.640	999999	999999	999999	999999
21	999999	999999	999999	999999	5.050	5.010	4.990	4.640	999999	999999	999999	999999
22	999999	999999	999999	999999	5.020	5.010	4.980	4.640	999999	999999	999999	999999
23	999999	999999	999999	999999	5.010	4.990	4.980	4.640	999999	999999	999999	999999
24	999999	999999	999999	999999	5.010	4.990	4.970	4.640	999999	999999	999999	999999
25	999999	999999	999999	999999	5.000	4.990	4.960	4.640	999999	999999	999999	999999
26	999999	999999	999999	999999	5.000	4.990	4.950	4.640	999999	999999	999999	999999
27	999999	999999	999999	999999	4.990	4.980	4.950	4.640	999999	999999	999999	999999
28	999999	999999	999999	999999	5.000	4.990	4.940	4.640	999999	999999	999999	999999
29	999999	999999	999999	999999	5.010	4.990	4.930	4.640	999999	999999	999999	999999
30	999999	999999	999999	999999	4.990	4.990	4.920	4.640	999999	999999	999999	999999
31	999999	999999	999999	999999	4.990	4.980	999999	4.640	999999	999999	999999	999999
STATE 06 AGENCY USGS				11150000								
STATION 06 AGENCY USGS				11151500								

Figure 5 (Con't)

FILE TYPE	STATE CODE	AGENCY CODE	STATION IDENTIFICATION NUMBER	CROSS SECTION	SAMPLING DEPTH	PARAMETER METER	YEAR	STAT CODE	NO VALUE INDICATOR	DIST CODE	COUNTY CODE	DRAINAGE AREA	CONTIN. DRAINAGE AREA
R	06	USGS	111149400			00060	1976	00003	999999.0000	06	079	322.00	
STATION NAME OR LOCAL WELL NUMBER													
NACIMIENTO A REL NACIMIENTO DAM. NR BRADLEY, CA													
DAY	10	11	12	01	02	03	04	05	06	07	08	09	
1	465.000	131.000	129.000	21.000	171.000	22.000	340.000	156.000	330.000	407.000	568.000	440.000	
2	465.000	131.000	131.000	21.000	171.000	23.000	324.000	154.000	320.000	406.000	564.000	440.000	
3	465.000	131.000	131.000	21.000	171.000	22.000	322.000	153.000	320.000	405.000	564.000	440.000	
4	392.000	131.000	131.000	21.000	171.000	22.000	320.000	152.000	320.000	406.000	559.000	440.000	
5	152.000	131.000	131.000	21.000	215.000	22.000	187.000	152.000	320.000	405.000	559.000	440.000	
6	149.000	131.000	131.000	21.000	261.000	22.000	70.000	152.000	330.000	403.000	559.000	440.000	
7	149.000	131.000	131.000	21.000	261.000	22.000	72.000	151.000	330.000	402.000	555.000	440.000	
8	147.000	131.000	131.000	21.000	261.000	22.000	73.000	220.000	329.000	404.000	555.000	440.000	
9	147.000	131.000	131.000	20.000	227.000	22.000	75.000	282.000	330.000	400.000	551.000	440.000	
10	147.000	131.000	131.000	21.000	168.000	46.000	76.000	281.000	320.000	400.000	546.000	453.000	
11	147.000	134.000	131.000	21.000	165.000	124.000	78.000	280.000	328.000	400.000	546.000	440.000	
12	147.000	131.000	131.000	21.000	165.000	127.000	87.000	278.000	328.000	400.000	542.000	436.000	
13	147.000	134.000	131.000	21.000	165.000	127.000	97.000	277.000	328.000	491.000	537.000	436.000	
14	147.000	134.000	131.000	21.000	165.000	127.000	97.000	275.000	328.000	582.000	537.000	436.000	
15	147.000	131.000	131.000	21.000	165.000	127.000	98.000	273.000	328.000	582.000	537.000	436.000	
16	147.000	134.000	131.000	21.000	165.000	127.000	98.000	271.000	328.000	582.000	533.000	440.000	
17	147.000	134.000	131.000	21.000	165.000	127.000	99.000	270.000	328.000	577.000	499.000	440.000	
18	147.000	134.000	79.000	21.000	165.000	139.000	99.000	307.000	328.000	577.000	440.000	440.000	
19	144.000	134.000	5.500	66.000	162.000	160.000	100.000	340.000	326.000	577.000	440.000	436.000	
20	144.000	134.000	4.100	165.000	149.000	160.000	100.000	338.000	327.000	577.000	440.000	436.000	
21	141.000	134.000	3.400	165.000	149.000	160.000	100.000	338.000	327.000	573.000	440.000	432.000	
22	141.000	131.000	12.000	165.000	149.000	160.000	99.000	337.000	327.000	577.000	440.000	432.000	
23	139.000	131.000	20.000	165.000	149.000	194.000	97.000	336.000	371.000	577.000	440.000	416.000	
24	139.000	134.000	21.000	162.000	84.000	233.000	95.000	337.000	414.000	573.000	440.000	388.000	
25	139.000	131.000	21.000	162.000	23.000	233.000	94.000	334.000	412.000	573.000	440.000	384.000	
26	139.000	131.000	21.000	214.000	22.000	230.000	92.000	332.000	412.000	573.000	440.000	384.000	
27	139.000	131.000	21.000	333.000	22.000	230.000	92.000	332.000	411.000	573.000	440.000	384.000	
28	139.000	131.000	21.000	333.000	22.000	227.000	91.000	332.000	411.000	573.000	440.000	384.000	
29	139.000	131.000	21.000	329.000	23.000	224.000	121.000	332.000	409.000	568.000	440.000	333.000	
30	139.000	131.000	21.000	283.000	999999	301.000	157.000	331.000	407.000	568.000	440.000	312.000	
31	131.000	999999	21.000	171.000	999999	355.000	999999	331.000	999999	568.000	440.000	999999	

Figure 6. Data from Station 5g.

FILE TYPE	STATE AGENCY CODE	STATION IDENTIFICATION NUMBER	CROSS SECTION	SAMPLING DEPTH	PARAMETER CODE	YEAR	STAT CODE	NO. VALUE INDICATOR	DIST CODE	COUNTY CODE	DRAINAGE AREA	CONTRIB. DRAINAGE AREA
P	06	USGS	11149400		00065	1976	00012	999999.0000	06	079	322.00	
NACIMIENTO P REL NACIMIENTO DAM, NR BRADLEY, CA												
DAY	10	11	12	01	02	03	04	05	06	07	08	09
1	4.410	3.460	3.460	2.740	3.570	2.770	4.150	3.550	4.120	4.330	4.610	4.410
2	4.410	3.460	3.460	2.740	3.570	2.780	4.110	3.550	4.120	4.330	4.600	4.410
3	4.410	3.460	3.460	2.740	3.570	2.770	4.100	3.540	4.120	4.320	4.600	4.420
4	999999	3.460	3.460	2.740	3.570	2.770	4.090	3.540	4.120	4.330	4.590	4.420
5	3.540	3.460	3.460	2.740	3.730	2.770	3.670	3.540	4.120	4.320	4.590	4.420
6	3.530	3.460	3.460	2.740	3.880	2.770	3.160	3.540	4.120	4.320	4.590	4.430
7	3.530	3.460	3.460	2.740	3.880	2.770	3.170	3.540	4.120	4.310	4.580	4.430
8	3.520	3.460	3.460	2.740	3.880	2.770	3.180	3.790	4.120	4.320	4.580	4.430
9	3.520	3.460	3.460	2.730	3.770	2.770	3.190	3.980	4.120	4.310	4.570	4.430
10	3.520	3.470	3.460	2.740	3.560	2.970	3.200	3.980	4.120	4.310	4.560	4.440
11	3.520	3.470	3.460	2.740	3.550	3.390	3.200	3.980	4.120	4.310	4.560	4.430
12	3.520	3.460	3.460	2.740	3.550	3.400	3.260	3.970	4.120	4.310	4.550	4.400
13	3.520	3.470	3.460	2.740	3.550	3.400	3.300	3.970	4.120	999999	4.540	4.400
14	3.520	3.470	3.460	2.740	3.550	3.400	3.310	3.960	4.120	4.640	4.540	4.400
15	3.520	3.460	3.460	2.740	3.550	3.400	3.310	3.960	4.120	4.640	4.540	4.400
16	3.520	3.470	3.460	2.740	3.550	3.400	3.310	3.950	4.120	4.640	4.530	4.410
17	3.520	3.470	3.460	2.740	3.550	3.400	3.310	3.950	4.120	4.630	999999	4.410
18	3.510	3.470	999999	2.740	3.550	3.450	3.320	4.050	4.120	4.630	4.420	4.410
19	3.510	3.470	2.500	999999	3.540	3.530	3.320	4.150	4.110	4.630	4.420	4.400
20	3.510	3.470	2.460	3.570	3.490	3.530	3.320	4.150	4.110	4.630	4.410	4.400
21	3.500	3.470	2.450	3.570	3.490	3.530	3.320	4.150	4.120	4.620	4.410	4.390
22	3.500	3.460	2.420	3.570	3.490	3.530	3.310	4.140	4.110	4.630	4.410	4.390
23	3.490	3.460	2.730	3.570	3.490	999999	3.300	4.140	4.240	4.630	4.410	4.350
24	3.490	3.470	2.740	3.560	3.200	3.810	3.300	4.140	4.350	4.620	4.410	4.270
25	3.490	3.460	2.740	3.560	2.780	3.810	3.290	4.130	4.340	4.620	4.410	4.270
26	3.490	3.460	2.740	999999	2.770	3.800	3.280	4.130	4.340	4.620	4.400	4.270
27	3.490	3.460	2.740	4.130	2.770	3.800	3.280	4.130	4.340	4.620	4.410	4.270
28	3.480	3.460	2.740	4.130	2.770	3.790	3.280	4.130	4.340	4.620	4.410	4.200
29	3.470	3.460	2.740	4.120	2.780	3.780	3.410	4.130	4.330	4.610	4.410	4.130
30	3.470	3.460	2.740	999999	999999	999999	3.560	4.130	4.330	4.610	4.410	4.070
31	3.460	999999	2.740	3.570	999999	4.190	999999	4.130	999999	4.610	4.420	999999
11149650 NOT ON DISK												
STATE 06 AGENCY USGS STATION 11149650												
11149700 NOT ON DISK												
STATE 06 AGENCY USGS STATION 11149700												

Figure 6 (Con't)

UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY														PROCESS DATE 03/09/77	
MULTIPLE STATION LISTING															
STATION NUMBER	DATE OF SAMPLE	TYPE	STREAM WIDTH (FT)	TEMPERATURE (DEG C)	WEATHER	SURFACE AREA (SQUARE MILES)	INSTANTANEOUS DISCHARGE (CFS)	NUMBER OF SAILING POINTS	SPECIFIC CONDUCTANCE (MICRO-MHOS)	DISSOLVED OXYGEN (MG/L)	PH				
												(00004)	(00010)	(00041)	(00049)(00061)
111140900 4g	75-11-07	2	--	14.5	--	156	2.4	--	--	--	--	--	--		
	75-12-01	2	--	7.0	--	156	4.7	--	--	--	--	--	--		
	76-01-19	2	--	7.5	--	156	5.8	--	--	--	--	--	--		
	76-02-02	2	--	9.5	--	156	5.0	--	--	--	--	--	--		
	76-02-02	2	--	9.5	--	156	5.0	1	--	--	--	--	--		
	76-02-02	2	--	9.5	--	156	5.0	1	--	--	--	--	--		
	76-03-09	2	--	13.0	--	156	42	--	--	--	--	--	--		
	76-04-09	2	--	19.0	--	156	32	--	--	--	--	--	--		
111149900 9g-4s	76-05-06	2	--	18.0	--	156	6.5	--	--	--	--	--	--		
	76-06-04	2	--	22.5	--	156	54	--	--	--	--	--	--		
	76-01-19	2	--	15.5	--	223	4.9	--	--	--	--	--	--		
	76-02-02	2	--	17.0	--	223	5.4	--	--	--	--	--	--		
	76-02-02	2	--	--	--	223	5.4	1	--	--	--	--	--		
	76-02-02	2	--	--	--	223	5.4	1	--	--	--	--	--		
	76-02-02	2	--	--	--	223	5.4	1	--	--	--	--	--		
	76-02-02	2	--	--	--	223	--	--	--	--	--	--	--		
	76-02-02	2	--	--	--	223	--	--	--	--	--	--	--		
	76-02-02	2	--	--	--	223	--	--	--	--	--	--	--		
	76-02-02	2	--	--	--	223	5.4	1	--	--	--	--	--		
	76-02-02	2	--	--	--	223	5.4	1	--	--	--	--	--		
	76-02-02	2	--	--	--	223	5.4	1	--	--	--	--	--		
	76-03-01	2	--	13.0	--	223	74	--	--	--	--	--	--		
	76-03-12	2	--	19.5	--	223	19	--	--	--	--	--	--		
	76-03-12	2	50	19.5	--	223	19	16	--	--	--	--	--		
76-04-09	2	26	19.0	--	223	13	12	--	--	--	--	--			
76-04-09	2	--	19.0	--	223	13	--	--	--	--	--	--			

Figure 7. USGS water quality data for stations 4g and 9g-4s, 1976.



UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY  
MULTIPLE STATION LISTING

PROCESS DATE 08/09/77

STATION NUMBER	DATE OF SAMPLE	SUS- PENDING ZINC (Zn) (UG/L) (01091)	TOTAL ZINC (Zn) (UG/L) (01092)	DIS- SOLVED SELE- NIUM (SE) (UG/L) (01145)	TOTAL SELE- NIUM (SE) (UG/L) (01147)	FECAL COLI- FORM (COL. PER 100 ML) (31616)	FECAL COLI- FORM (COL. PER 100 ML) (31625)	SUS. SED. SIEVE DIAM. % FINER THAN .062 MM (70331)	SUS. SED. SIEVE DIAM. % FINER THAN .125 MM (70332)	SUS. SED. SIEVE DIAM. % FINER THAN .250 MM (70333)	SUS. SED. SIEVE DIAM. % FINER THAN .500 MM (70334)
11148900	75-11-07	--	--	--	--	--	--	--	--	--	--
	75-12-01	--	--	--	--	--	--	--	--	--	--
	76-01-19	--	--	--	--	--	--	--	--	--	--
	76-02-02	--	--	--	--	--	--	--	--	--	--
	76-02-02	--	--	--	--	--	--	--	--	--	--
11149900	76-02-02	--	--	--	--	--	--	--	--	--	--
	76-02-02	--	--	--	--	--	--	--	--	--	--
	76-03-09	--	--	--	--	--	--	--	--	--	--
	76-04-09	--	--	--	--	--	--	--	--	--	--
	76-05-06	--	--	--	--	--	--	--	--	--	--
	76-06-04	--	--	--	--	--	--	--	--	--	--
	76-01-19	--	--	--	--	--	--	--	--	--	--
	76-02-02	--	--	--	--	--	--	--	--	--	--
	76-02-02	--	--	--	--	--	--	--	--	--	--
	76-02-02	--	--	--	--	--	--	--	--	--	--
	76-02-02	--	--	--	--	--	--	--	--	--	--
	76-02-02	--	--	--	--	--	--	--	--	--	--
	76-02-02	--	--	--	--	--	--	--	--	--	--
	76-03-01	--	--	--	--	--	--	65	71	85	97
	76-03-12	--	--	--	--	--	--	--	--	--	--
	76-03-12	--	--	--	--	--	--	--	--	--	--
	76-04-09	--	--	--	--	--	--	--	--	--	--
	76-04-09	--	--	--	--	--	--	--	--	--	--
	76-04-09	--	--	--	--	--	--	--	--	--	--

Figure 7 (Con't)

UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY  
MULTIPLE STATION LISTING

PROCESS DATE 08/09/77

STATION NUMBER	DATE OF SAMPLE	SUS. SIEVE DIAM. % FINER THAN 1.00 MM (70335)	TOTAL ANTIMONY (114) (114/L) (71845)	TOTAL NITROGEN (NO3) (114/L) (71887)	DIS- SOLVED MERCURY (UG/L) (71890)	SUS- PENDED MERCURY (UG/L) (71895)	TOTAL MERCURY (UG/L) (71900)	ELEV. OF LAND SURFACE DATUM (FT. ABOVE MSL) (72000)	SUS- PENDED SEDI- MENT DIS- CHARGE (T/DAY) (80154)	SUS- PENDED SEDI- MENT DIS- CHARGE (T/DAY) (80155)	BED MAT. SIEVE DIAM. % FINER THAN .062 MM (80164)
11148900	75-11-07	--	--	--	--	--	--	--	10	.06	--
	75-12-01	--	--	--	--	--	--	--	5	.06	--
	76-01-19	--	--	--	--	--	--	--	1	.02	--
	76-02-02	--	--	--	--	--	--	--	16	.22	--
	76-02-02	--	--	--	--	--	--	--	--	--	--
	76-02-02	--	--	--	--	--	--	--	--	--	--
	76-02-02	--	--	--	--	--	--	--	--	--	--
	76-02-02	--	--	--	--	--	--	--	--	--	--
11149900	76-02-02	--	--	--	--	--	--	--	--	--	4
	76-02-02	--	--	--	--	--	--	--	7	.79	--
	76-03-09	--	--	--	--	--	--	--	3	.26	--
	76-04-09	--	--	--	--	--	--	--	7	.12	--
	76-05-06	--	--	--	--	--	--	--	--	--	--
	76-06-04	--	--	--	--	--	--	--	4	.01	--
	76-01-19	--	--	--	--	--	--	800	3	.04	--
	76-02-02	--	--	--	--	--	--	800	10	.15	--
	76-02-02	--	--	--	--	--	--	300	--	--	--
	76-02-02	--	--	--	--	--	--	800	--	--	--
	76-02-02	--	--	--	--	--	--	800	--	--	--
	76-02-02	--	--	--	--	--	--	300	--	--	--
	76-02-02	--	--	--	--	--	--	800	--	--	1
	76-02-02	--	--	--	--	--	--	800	--	--	1
	76-02-02	--	--	--	--	--	--	800	--	--	14
	76-02-02	--	--	--	--	--	--	800	--	--	--
	76-02-02	--	--	--	--	--	--	800	--	--	--
11149900	76-03-01	100	--	--	--	--	--	800	195	.39	--
	76-03-12	--	--	--	--	--	--	800	4	.21	--
	76-03-12	--	--	--	--	--	--	800	--	--	--
	76-04-09	--	--	--	--	--	--	800	--	--	--
	76-04-09	--	--	--	--	--	--	800	4	.14	--

Figure 7 (Con't)

UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY  
MULTIPLE STATION LISTING

PROCESS DATE 08/09/77

STATION NUMBER	DATE OF SAMPLE	BED MAT. SIEVE DIAM. % FINER THAN .125 MM (80165)	BED MAT. SIEVE DIAM. % FINER THAN .250 MM (80166)	BED MAT. SIEVE DIAM. % FINER THAN .500 MM (80167)	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM (80168)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM (80173)	BED MAT. SIEVE DIAM. % FINER THAN 64.0 MM (80174)
11148900	75-11-07	--	--	--	--	--	--	--	--	--	--
	75-12-01	--	--	--	--	--	--	--	--	--	--
	76-01-19	--	--	--	--	--	--	--	--	--	--
	76-02-02	--	--	--	--	--	--	--	--	--	--
	76-02-02	1	6	37	46	53	63	77	91	94	100
	76-02-02	2	9	27	45	70	83	88	91	97	100
	76-02-02	16	60	93	96	96	97	98	98	100	--
	76-03-09	--	--	--	--	--	--	--	--	--	--
	76-04-09	--	--	--	--	--	--	--	--	--	--
	76-05-06	--	--	--	--	--	--	--	--	--	--
11149900	76-06-04	--	--	--	--	--	--	--	--	--	--
	76-01-19	--	--	--	--	--	--	--	--	--	--
	76-02-02	--	--	--	--	--	--	--	--	--	--
	76-02-02	--	2	15	52	82	95	99	100	--	--
	76-02-02	1	2	8	25	46	60	70	81	91	100
	76-02-02	2	11	32	53	71	84	93	99	100	--
	76-02-02	3	11	23	34	48	65	78	87	95	100
	76-02-02	38	71	77	83	88	90	93	97	98	100
	76-02-02	--	--	--	--	--	--	--	--	--	--
	76-02-02	--	--	--	--	--	--	--	--	--	--
76-03-01	76-03-01	--	--	--	--	--	--	--	--	--	--
	76-03-12	--	--	--	--	--	--	--	--	--	--
	76-03-12	--	--	--	--	--	--	--	--	--	--
	76-04-09	--	--	--	--	--	--	--	--	--	--
76-04-09	76-04-09	--	--	--	--	--	--	--	--	--	--

Figure 7 (Con't)

UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY

PROCESS DATE 08/09/77

MULTIPLE STATION LISTING

STATION NUMBER	DATE OF SAMPLE	SEDI-MENT BEDLOAD DIS-CHARGE (T/DAY)	SED. BEDLOAD			SED. BEDLOAD			SED. BEDLOAD			SED. BEDLOAD			SED. BEDLOAD		
			SIEVE DIAM.	% FINER THAN	SED. BEDLOAD SIEVE DIAM.	% FINER THAN	SED. BEDLOAD SIEVE DIAM.	% FINER THAN	SED. BEDLOAD SIEVE DIAM.	% FINER THAN	SED. BEDLOAD SIEVE DIAM.	% FINER THAN	SED. BEDLOAD SIEVE DIAM.	% FINER THAN	SED. BEDLOAD SIEVE DIAM.	% FINER THAN	
11148900	75-11-07	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	75-12-01	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-01-19	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
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	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
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	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
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	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
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	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
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	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
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	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	76-02-02	--	--	--	--	--	--</										

Figure 7 (Con't)



UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY									
MULTIPLE STATION LISTING									
STATION NUMBER	DATE OF SAMPLE	TYPE	STREAM WIDTH (FT) (00004)	TEMPERATURE (DEG C) (00010)	WEATHER (00041)	SURFACE AREA (SQUARE MILES) (00049)	INSTANTANEOUS DISCHARGE (CFS) (00061)	NUMBER OF SAMPLING POINTS (00063)	SPECIFIC CONDUCTANCE (MICRO-MHOS) (00095)
11149900 95-4s	76-05-06	2	--	17.5	--	223	2.4	--	--
	76-05-06	2	9.4	17.5	--	223	2.4	9	--
									DIS- SOLVED OXYGEN (MG/L) (00300)
									PH (UNITS) (00400)

Figure 7 (Con't)

UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY												PROCESS DATE 08/09/77	
MULTIPLE STATION LISTING													
STATION NUMBER	DATE OF SAMPLE	SUS. SED. SIEVE DIA. 1.00 IN. (70335)	TOTAL AMMONIA (NH4) (MG/L) (71845)	TOTAL NITRO-GEN (NO3) (MG/L) (71887)	DIS-SOLVED MERCURY (HG) (UG/L) (71890)	SUS-PENDED MERCURY (HG) (UG/L) (71895)	TOTAL MERCURY (HG) (UG/L) (71900)	ELEV. OF LAND SURFACE DATUM (FT. ABOVE MSL) (72000)	SUS-PENDED SEDI-MENT (T/DAY) (80154)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY) (80155)	BED MAT. SIEVE DIA. 1.00 IN. (80164)		
11149900	76-05-06	--	--	--	--	--	--	800	3	.02	--	--	
	76-05-06	--	--	--	--	--	--	800	--	--	--	--	

9g-4s

Figure 7 (Con't)

UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY  
MULTIPLE STATION LISTING

PROCESS DATE 08/09/77

STATION NUMBER	DATE OF SAMPLE	SEDI-	SED.	SED.	SED.	SED.	SED.	SED.	SED.
		MENT BEDLOAD DIS- CHARGE (T/DAY) (80225)	BEDLOAD SIEVE DIAM. % FINER THAN .125 MM (80227)	BEDLOAD SIEVE DIAM. % FINER THAN .250 MM (80228)	BEDLOAD SIEVE DIAM. % FINER THAN 1.00 MM (80230)	BEDLOAD SIEVE DIAM. % FINER THAN 2.00 MM (80231)	BEDLOAD SIEVE DIAM. % FINER THAN 4.00 MM (80232)	BEDLOAD SIEVE DIAM. % FINER THAN 8.00 MM (80233)	BEDLOAD SIEVE DIAM. % FINER THAN 16.0 MM (80234)
11149900	76-05-06	--	--	--	--	--	--	--	--
	76-05-06	1.4	--	--	12	99	100	--	--

9g-4s

Figure 7 (Con't)

#### 4 DATA COLLECTION STATIONS AT SELECTED INSTALLATIONS

This chapter provides information for each of the 21 installations (except Hunter-Liggett) from which data were collected. As with Hunter-Liggett, data from both STORET and WATSTORE stations were retrieved and plotted on 1:250,000 USGS topographic maps.

Tables 7 through 27 group stations by watershed or confluence, and the code numbers used are those numbers by which each station is identified on STORET and WATSTORE. The numbers used in the overlay maps (provided in back of report) are for convenience only. Their numbered order has no significance, but all s stations are listed on STORET retrieval, g stations on WATSTORE, and s-g stations on both systems. The maps can be used together, or as overlays with the 1:250,000 topographic source map. If the drainage overlay only is used with the topographic map, registration is accomplished by stream alignment. If the two overlay maps are used together, registration can be accomplished by aligning the tic marks. All installation maps, except for Bliss, are printed at the scale of the source map, 1:250,000. Bliss was reduced because the installation is too large for the printing format.

The map symbols are explained in Figure 8.



Table 7  
Fort Benning

Map No.	Station Code	Coordinates		Description Location	Confluence
		Latitude	Longitude		
1g	02341600	32°31'41"	84°34'14"	Upatoi Creek at Hwy 41	Upatoi-Chattahoochee River
2s-2g	0234800	32°24'48"	84°49'12"	Upatoi Creek nr Ochillee	Upatoi-Chattahoochee River
3g	02341960	32°24'00"	84°54'00"	Upatoi Creek at Hwy 1	Upatoi-Chattahoochee River
3s	121520	32°22'17"	84°55'30"	Upatoi Creek nr Fort Benning	Upatoi-Chattahoochee River
4g	02342000	32°22'35"	84°56'40"	Upatoi Creek nr Fort Benning	Upatoi-Chattahoochee River
1s	12218001	32°18'00"	84°53'43"	Downstream on Chattahoochee River south of Fort Benning	
4s	121500	32°16'50"	84°52'50"	Same as above	

Table 8  
Fort Bliss

Map No.	Station Code	Coordinates		Description Location	Confluence
		Latitude	Longitude		
s1	08481500	33°08'41"	105°53'50"	Rio Tularosa near Bent, NM	Rio Grande
g1	08486260	32°22'05"	106°28'44"	Tularosa Valley Tr at White Sands, NM	Rio Grande
g2	480046	31°45'08"	106°29'34"	Rio Grande at El Paso	Rio Grande

Table 9  
Fort Bragg

Map No.	Station Code	Coordinates		Description Location	Confluence
		Latitude	Longitude		
27s	02102908	35°10'54"	79°10'40"	Flat Creek	
16s-12g	CPF135G	35°10'40"	79°02'00"	Little River	Lower Little River-Fear River
2s-13g	CPF136	35°11'42"	78°59'24"	Little River	Lower Little River-Fear River
3s-14g	CPF137	35°12'06"	78°57'20"	Little River	Lower Little River-Fear River
43g	616-1	35°11'36"	78°59'50"	McDuffies Creek	Little River-Lower Little River
46g	616-4	35°11'42"	78°59'24"	McDuffies Creek	Little River-Lower Little River
45g	616-3	35°12'00"	78°59'30"	McDuffies Creek	Little River-Lower Little River
13s	CPF137A	35°10'20"	78°51'50"	Carvers Creek	Cape Fear River
14s-15g	CPF137B	35°09'06"	78°52'18"	Carvers Creek	Cape Fear River
15s	CPF137D	35°08'50"	78°51'20"	Carvers Creek	Cape Fear River
16g	CPF137C	35°09'00"	78°52'15"	Carvers Creek	Cape Fear River
25s	EF001822 B8098000	35°03'36"	79°02'30"	Bones Creek	Little Rock Fish
9s-25g	CPF146	35°04'30"	79°00'35"	Stewart's Creek	Beaver Creek
10s-27g	CPF146B	35°03'24"	78°59'15"	Stewart's Creek	Beaver Creek
7s-22g	CPF145B	35°05'00"	78°58'06"	Beaver Creek	Rockfish Creek
24g	CPF145D	35°05'05"	78°59'00"	Beaver Creek	Rockfish Creek
6s-21g	CPF145A	35°05'20"	78°57'45"	Fear River Trib.	Fear River
19s	CPF138B	35°04'55"	78°53'48"	Fear River Trib.	Fear River
21s-17g	CPF138A	35°05'20"	78°53'15"	Fear River Trib.	Fear River
45s	D7698006	34°58'45"	79°11'45"	Rockfish Creek	Cape Fear River
44g	616-2	35°12'00"	78°59'30"	McDuffies Creek	Little River-Lower Little River
31g	CPF149	35°03'30"	79°01'00"	Beaver Creek Trib. #2	Beaver Creek
24s	NC0022489	35°09'54"	78°58'24"	Little River Trib.	Little River

Table 10  
Fort Campbell

Map No.	Station Code No.	Coordinates		Description Location	Confluence
		Latitude	Longitude		
1s	03438000	36°46'40"	87°43'18"	Little River	Lake Barkley
2s	03438010	36°50'28"	87°46'39"	Little River	Sinking Forks Little River
1g	03436400	36°37'20"	87°40'47"	Noahs Spring Branch	West Fork River
2g	03436460	36°35'31"	87°23'23"	Little West Fork	West Fork River
3s	470106	36°45'55"	87°57'48"	Lake Barkley	Cumberland River
4s	470107	36°41'03"	87°55'09"	Lake Barkley	Cumberland River
5s	470108	36°31'41"	87°52'12"	Lake Barkley	Cumberland River
6s	470109	36°29'05"	87°44'33"	Lake Barkley	Cumberland River
7s	470110	36°23'41"	87°39'33"	Lake Barkley	Cumberland River
8s	600060	36°25'00"	87°40'00"	Lake Barkley	Cumberland River
9s	600062	36°24'00"	87°39'00"	Lake Barkley	Cumberland River
3g	03437000	36°29'26"	87°50'20"	Cumberland River at Dover, TN	



Table 11  
Fort Carson

Map No.	Station Code	Coordinates		Description Location	Confluence
		Latitude	Longitude		
1s-1g	07105800	38°43'46"	104°44'00"	Fountain Creek	Turkey Creek
2s	07105500	38°48'58"	104°49'17"	Fountain Creek	
3s	C0-0026735-N	38°48'30"	104°48'40"	Colorado Springs STP	
4s-10g	384620104461500	38°46'20"	104°46'15"	Fountain Creek	
5s	383750104402000	38°37'50"	104°40'20"	Fountain Creek	
6s	384105104514800	38°41'05"	104°51'48"	Little Turkey Creek	
7s	384232104505300	38°42'32"	104°50'53"	Turkey Creek	
8s-9g	384510104454100	38°45'10"	104°45'41"	Fountain Creek Trib @ Fountain	
9s	384856104593201	38°48'56"	104°59'32"	Lake Moraine	
10s	384810104474300	38°48'10"	104°47'43"	Fountain Creek	
*11s-18s	PPA031	38°43'04"	104°43'30"	Fountain Creek	
12s	PPA032	38°39'30"	104°41'47"	Fountain Creek	
13s	07103700	38°51'17"	104°52'39"	Fountain Creek	
14s	PPA014	38°49'06"	104°49'52"	Fountain Creek	
15s	PPA020	38°47'40"	104°47'00"	Fountain Creek	
16s	PPA021	38°46'30"	104°46'27"	Fountain Creek	
17s	PPA024	38°44'07"	104°44'15"	Fountain Creek	
*18s-11s	PPA031	38°43'04"	104°43'30"	Fountain Creek	
2g	07105900	38°41'04"	104°41'17"	Jimmy Camp Cr. @ Fountain	
3g	07106000	38°36'08"	104°40'13"	Fountain Creek	
4g	38384104390901	38°38'04"	104°39'09"	Calhan Reservoir	
5g	384318104431600	38°43'18"	104°43'16"	Pit 9 Test A	
6g	384330104434500	38°43'30"	104°43'45"	Clover Ditch Return	
7g	384356104433800	38°43'56"	104°43'38"	Pit 8 Test A	
8g	384453104415401	38°44'53"	104°41'54"	Big Johnson Reservoir	

Table 12

## Fort Dix

Map No.	Station Code	Coordinates		Description Location	Confluence
		Latitude	Longitude		
1g-2s	01464290	40°02'10"	74°32'11"	Crosswicks Creek at Hockamik Road near Cookstown, NJ	Delaware River
2g	01464300	40°02'44"	74°32'23"	Crosswicks nr Cookstown	Delaware River
3g	01464330	40°02'50"	74°31'52"	Crosswicks nr New Egypt	Delaware River
4g	01464380	40°02'58"	74°33'47"	North rn at Cookstown	Delaware River
5g	01464400	40°04'03"	74°31'57"	Crosswicks at New Egypt	Delaware River
6g	01464410	40°04'12"	74°31'51"	Crosswicks at New Egypt	Delaware River
7g	01464420	40°05'03"	74°32'28"	Crosswicks nr New Egypt	Delaware River
8g	01464430	40°06'08"	74°32'40"	Crosswicks nr Horners-town	Delaware River
9g	01464460	40°06'24"	74°32'12"	Lahaway C. nr Horners-town	Delaware River
8s	332083	40°09'35"	74°39'20"	Crosswicks at NJ Turn-pike	Delaware River
11g	01464526	40°09'05"	74°42'59"	Crosswicks at Bordentown	Delaware River
5s	01464531	40°08'14"	74°42'42"	Black Cr. at Bordentown	Delaware River
10g	01464525	40°08'50"	74°41'46"	Thornton Cr. at Borden-town	Delaware River
1s	30C	40°08'50"	74°43'28"	Del. River at Bordentown	Delaware River
12g	01466100	39°55'44"	74°31'53"	Mt. Misery Br at Upton	NB Rancocas
17g	01465998	39°55'00"	74°30'18"	Mt. Misery Br at Mt. Misery	
13g-12s	01466000	39°55'00"	74°30'30"	Mt. Misery Br at Mt. Misery	NB Rancocas
18g-11s	01466900	39°57'23"	74°31'53"	Greenwood B. at New Lisbon	NB Rancocas
19s	M73WRA08	39°57'25"	74°37'42"	Rancocas Cr. at Elmwood Road	NB Rancocas
15g	01465970	39°58'04"	74°34'48"	Rancocas at Brown Mills	NB Rancocas
20s	395938074374201	39°59'38"	74°37'42"	Fort Dix	NB Rancocas
26s	M73RA07	39°57'35"	74°37'47"	Rancocas at New Lisbon	NB Rancocas
27s	M73RA08	39°57'25"	74°37'42"	Rancocas at New Lisbon	NB Rancocas

Table 12 (Cont'd)

Map No.	Station Code	Coordinates		Description Location	Confluence
		Latitude	Longitude		
19g	01466950	39°57'46"	74°39'25"	Rancocas nr Pemberton	NB Rancocas
21s	M73RA02	39°59'50"	74°52'20"	Rancocas at Centerton	NB Rancocas-DE
28s	1467008	39°59'47"	74°52'05"	Rancocas at Centerton	NB Rancocas-DE
3s	1467016	40°00'36"	74°53'16"	Rancocas at Willingboro	NB Rancocas-DE
7s	M73RA01	40°01'45"	74°56'00"	Rancocas at Bridgeboro	NB Rancocas-DE
4s	332090	40°02'31"	74°57'30"	Rancocas at Delanco	NB Rancocas-DE

Table 13

## Fort Drum

Map No.	Station Code	Coordinates		Description Location	Confluence
		Latitude	Longitude		
12s-4g	440929075422100	44°09'29"	75°42'21"	Indian River nr Philadelphia	Indian River
11s-3g	4405230754844	44°05'23"	75°48'44"	West Creek nr Evans Mill	Indian River
10s	4402220754005	44°02'22"	75°40'05"	Indian River in Reservation	Indian River
8s	4358030753726	43°58'03"	75°37'26"	Black River nr West Carthage	Black River
5s	04258730	43°58'32"	75°36'45"	Black River at Carthage	Black River
2s	04258750	43°59'53"	75°38'17"	Black River below Carthage	Black River
3s	04259440	43°59'02"	75°44'03"	Mill Creek nr Champion	Black River
4s-1g	04259450	44°00'53"	75°44'38"	Felts Mills Creek nr Felts Mill	Black River
9s	4400170754815	44°00'17"	75°48'15"	Black River nr Black River, NY	Black River
1s	04259500	44°00'13"	75°48'23"	Black River at Black River, NY	Black River
7s	04259980	43°59'01"	75°51'43"	Black River at Huntingtonville	Black River
6s	04250100	43°58'28"	75°52'34"	Black River nr Watertown	Black River



Table 14  
Fort Gordon

Map No.	Station Code	Coordinates		Description Location	Confluence
		Latitude	Longitude		
1g	02196820	33°26'36"	82°07'43"	Butler Creek at U.S. 10	Butler Creek - Lake
1s	127110	33°24'00"	82°09'00"	Spirit Creek South of Fort Gordon	Spirit Creek - Lake
2s	127108	33°23'20"	82°08'15"	Spirit Creek South of Fort Gordon	Spirit Creek - Lake
3s	127106	33°22'25"	82°08'25"	Spirit Creek	Spirit Creek - Lake

Table 15

## Fort Hood

Map No.	Station Code No.	Coordinates		Description Location	Confluence
		Latitude	Longitude		
2s-1g	08101000	31°17'05"	97°53'05"	Cowhouse Creek	Belton Lake
2g	08101500	31°12'21"	97°42'55"		
3s	08104050	31°01'20"	97°31'57"	Stillhouse Hollow Lake	
5g	08102600	31°03'06"	97°27'25"	Nolan Creek	Leon River
5s-4g	08102500	31°04'12"	97°26'28"	Leon River	Belton Lake
4s-3g	08102000	31°06'22"	97°28'28"	Belton Lake	
6s	480302	31°08'42"	97°31'44"		
7s	480303	31°09'08"	97°30'19"		
8s	480304	31°12'18"	97°30'18"		

Table 16

## Hunter-Liggett Station Descriptions

Map No.	Station Code	Coordinates		River Mile Distance from Confluence	Confluence Which Station is Measured From
		Latitude	Longitude		
2s	03322550	36°00'50"	121°25'10"	54.5 miles	Nacimientto River and the Salinas River Confluence (= N-S) N-S (stations are N-S on the N-S Nacimientto R.)
3g	11148820	35°48'50"	121°05'25"	30 miles	
2g-3s	11148800	35°48'06"	121°06'50"	29 1/3 miles	
4g	11148900	35°47'19"	121°05'34"	27 4/5 miles	
8g	11149300	35°45'29"	120°53'01"	11 miles	
5g	11149400	35°45'41"	120°51'16"	9 3/4 miles	
6g	11149650	36°01'10"	121°14'15"	36.6 miles	San Antonio River and the Salinas River confluence (= S-S) S-S (stations are S-S on the S-S San Antonio River) S-S
9s	03230000	35°57'30"	121°11'24"	30 miles	
7g-5s	11149700	35°54'45"	121°07'50"	25 1/2 miles	
9g-4s	11149900	35°53'48"	121°05'14"	23 miles	
8s	03221500	35°53'48"	121°05'12"	22 1/2 miles	
7s	03220000	35°51'54"	120°59'30"	16 3/4 miles	
10g	11150000	35°51'55"	120°59'30"	15 1/5 miles	
11g	11150020	35°50'35"	120°57'45"	12 miles	
12g	11150100	35°47'55"	120°53'02"	7 1/5 miles	
6s	02185000	35°55'42"	120°52'00"	10 1/2 miles	N-S (station is on Salinas River) (station is on Feliz Canyon)
1g	11142600	35°50'12"	121°23'25"	3/4 mile upstream from ocean	

Table 17  
Jefferson Proving Ground

Map No.	Station Code	Coordinates		Description Location	Confluence
		Latitude	Longitude		
1g	MAD-01	38°49'06"	85°26'34"	Harberts Creek	Big Creek



Table 18

## Fort Knox

Map No.	Date	Station Code	Coordinates		Description Location	Confluence	Cross Ref.
			Latitude	Longitude			
1g	1949-1973	03301630	37°49'22"	85°44'52"	Rolling Fork	Salt River-OH	
3s	-	210488	-	-	2.1m up Salt River from Ohio River	Salt River-OH	
4g	1977	12029900	37°54'56"	85°54'01"	Mill Creek	Salt River-OH	
5g	1970	200756	38°00'04"	85°56'33"	U.S. 60 Bridge	Salt River-OH	
2g	1947		38°00'19"	86°09'58"	Spring & Wells	On Ohio River	2s
1s	-	03302080	37°47'22"	85°59'19"	Otter Creek nr nr Vine Gr.	Otter Creek-OH	
3g	1972	03302100	37°54'06"	86°01'32"	Otter Creek at at Grahamton	Otter Creek-OH	

Table 19

## Fort Lewis

Map No.	Station Code	Coordinates		Description Location	Confluence
		Latitude	Longitude		
1g	12079000	46°51'08"	122°40'03"	Deschutes River at Rainier	Puget Sound
2g	12079004	46°52'23"	122°43'44"	Deschutes River at Hwy 507	Puget Sound
3g	12081480	46°59'31"	122°43'22"	St. Clair Creek at Yelm	Deschutes
26s	11A080	46°56'00"	122°33'35"	Nisqually River at McKenna	Puget Sound
1s	12089500	46°56'01"	122°33'33"	Nisqually River at McKenna	Puget Sound
16g-22s	12090205	46°59'49"	122°37'37"	Muck Creek nr Roy, WA	Puget Sound
15g-25s	12090203	47°01'21"	122°37'34"	Nisqually Lake nr Roy	Puget Sound
4s	12090240	47°03'43"	122°41'42"	Nisqually River at Nisqually	Puget Sound
18s	12090450	47°06'30"	122°26'28"	Spanaway Lake nr Spanaway	Puget Sound
11s-18g	12090290	47°07'00"	122°33'47"	Murray Creek nr Tillicum	Puget Sound
19s	530102	47°07'36"	122°34'03"	American Lake	Puget Sound
7s	12090300	47°06'30"	122°35'18"	American Lake	Puget Sound
3s-13g	12090060	47°02'00"	122°29'35"	Muck Creek nr Roy	Puget Sound
29s-14g	12090200	47°00'20"	122°32'32"	Muck Creek at Roy	Puget Sound

Table 20  
Fort McClellan

Map No.	Date	Station Code	Coordinates		Description Location	Confluence
			Latitude	Longitude		
4g	1967	02403135	33°44'38"	85°40'12"	CC* near White Plains	CC-Logan Martin Lake
5g	1967	02403200	33°39'48"	85°41'16"	CC at Chocco-locco	CC-Logan Martin Lake
10s	-	015855	33°37'	85°47'	CC at Br Co Rd E. Oxford	CC-Logan Martin Lake
9s	-	015850	33°37'	85°49'	Snow Creek, U.S. 78 at Oxford	CC-Logan Martin Lake
8s	-	015833	33°38'	85°55'	Dry Creek NE Bynum	CC-Logan Martin Lake
6s	-	015806	33°35'	86°02'	Eastaboga Creek	CC-Logan Martin Lake
2s	-	015920	33°44'	85°49'	Cane Creek SW Weaver	Cane Creek-Logan Martin Lake
3g	1967	02401915	33°43'44"	86°02'38"	Cane Creek at Francis Mill	Cane Creek-Logan Martin Lake
1s	-	015900	33°43'	86°03'	Cane Creek SW Boiling Springs	Cane Creek-Logan Martin Lake
5s	-	015945	33°50'	85°50'	TC* at S. Centre	TC-Logan Martin Lake
1g	1967	02401800	33°48'57"	85°52'22"	TC near Wellington	TC-Logan Martin Lake
4s	-	015940	33°49'	85°54'	TC at US Hwy 431	TC-Logan Martin Lake
12s	-	02401700	33°52'14"	85°54'01"	Ohatchee at Reads	TC-Logan Martin Lake
3s	-	015930	33°47'	86°00'	Ohatchee at Ohatchee	TC-Logan Martin Lake
13s-2g	1967	02401895	33°46'48"	85°59'53"	Ohatchee at Ohatchee	TC-Logan Martin Lake
11s	-	02400000	33°57'23"	34°38'2"	Terrapin Creek near Piedmont	Terrapin Creek Trib.

Coordinate latitude and longitude measurements to minutes only are approximations

\*CC - denotes Choccolocco Creek  
\*TC - denotes Tallahatchee Creek

Table 21

## Fort Ord

Map No.	Date	Station Code	Coordinates		Description Location	Confluence
			Latitude	Longitude		
2s	-	11151700	36°24'40"	121°19'06"	Salinas at Soledad, CA	Salinas-Pacific
6s	-	02132510	36°29'24"	121°28'06"	Salinas nr Gonzales	Salinas-Pacific
4s	-	11152300	36°33'14"	121°32'50"	Salinas nr Chualar	Salinas-Pacific
1s	-	11152500	36°37'52"	121°40'17"	Salinas nr Spreckels	Salinas-Pacific
2g	-	11152500	36°37'52"	121°40'17"	Salinas nr Spreckels	Salinas-Pacific
9s	-	02116020	36°38'30"	121°42'00"	Salinas at David Rd	Salinas-Pacific
8s	-	02115030	36°40'42"	121°44'42"	Salinas at Blanco Rd	Salinas-Pacific
7s	-	02111070	36°43'06"	121°45'00"	Salinas above Hwy 1	Salinas-Pacific
12s	-	02119820	36°32'54"	121°43'48"	Watson Creek nr Corral De Tierra Rd	El Toro Creek-Salinas
11s	-	02119520	36°33'12"	121°43'54"	El Toro at Potter Ranch	El Toro Creek-Salinas
5s	-	363418121443801	36°34'18"	121°44'38"	El Toro Creek	El Toro Creek-Salinas
10s	-	02118520	36°34'42"	121°43'12"	El Toro near San Benancio Br	El Toro Creek-Salinas
3g	-	11152540	36°35'00"	121°42'50"	El Toro Creek nr Spreckels	El Toro Creek-Salinas
1g	-	11143300	36°35'38"	121°50'12"	Arroyo Del Ray at Del Ray Oaks, CA	Arroyo Del Ray-Pacific
13s	-	04100850	36°32'12"	121°55'36"	Carmel River nr Mouth	Carmel-Pacific



Table 22

## Fort Polk

Map No.	Station Code	Coordinates		Description Location	Confluence
		Latitude	Longitude		
25s	08027725	31°09'35"	93°13'43"	Bayou Castor at Hwy 8 nr Leesville	Bayou Anacoco Watershed
26s	08027726	31°08'32"	93°15'28"	Bayou Castor at Leesville	Bayou Anacoco Watershed
24s	08027720	31°04'20"	93°18'08"	Bayou Castor near Newllano	Bayou Anacoco Watershed
5s	08027730	31°01'55"	93°20'10"	Bayou Castor near Pickering	Bayou Anacoco Watershed
6s	08027740	31°02'10"	93°17'05"	Bayou Zourie at Pickering	Bayou Anacoco Watershed
27s	08027750	31°01'12"	93°20'45"	Bayou Castor SW of Pickering	Bayou Anacoco Watershed
1s	08028000	30°57'10"	93°21'10"	Bayou Anacoco near Rosepine	Bayou Anacoco Watershed
28s	08028100	30°54'15"	93°23'44"	Bayou Anacoco NW of De Ri, LA	Bayou Anacoco Watershed
10s	08028200	30°52'14"	93°30'38"	Bayou Anacoco near Knight, LA	Bayou Anacoco Watershed
12s	08012650	31°10'55"	92°59'45"	Floctaw Creek near Lacamp	Calcasieu River Watershed
1g	08013610	31°00'55"	93°09'50"	Whiskey Chitto Creek near Leesville	Whiskey Chitto Creek Watershed
13s	08013600	31°04'55"	93°08'50"	Whiskey Chitto at Fort Polk	Whiskey Chitto Creek Watershed
2s	08013700	30°57'45"	93°08'15"	Drakes Creek near Pitkin	Drakes Creek Trib.
3s	08014550	30°54'45"	93°15'15"	Clear Creek near Rosepine	Clear Creek Trib.

Table 23  
Fort Riley

Map No.	Station Code	Coordinates		Description Location	Confluence
		Latitude	Longitude		
1s	200903	39°11'14"	96°59'09"	Milford Reservoir	
2s	200902	39°07'33"	96°54'57"	Milford Reservoir	
3s	200901	39°04'40"	96°53'51"	Milford Reservoir	
6s	000416	39°06'00"	96°54'00"	Milford Reservoir	
7s	190414	39°06'40"	96°56'22"	Milford Reservoir	
12s	06857000	39°09'53"	96°54'56"	Milford Reservoir	
10s	000023	39°02'40"	96°44'00"	Clark Creek	Clark Creek-KS River
11s	06879200	39°00'28"	96°44'20"	Clark Creek	Kansas River
9s-2g	000024	39°03'09"	96°46'33"	Kansas River	Kansas River
3g	06879500	39°06'15"	96°41'55"	Kansas River	
5s-1g	000263	39°04'15"	96°52'00"	Republican River	Milford Reservoir
4s	000264	39°02'00"	96°48'00"	Smoky Hill River	Republican River
8s	000025	39°03'45"	96°48'00"		Republican River

Table 24  
Fort Rucker

Map No.	Station Code No.	Coordinates		Description Location	Confluence
		Latitude	Longitude		
1s5g	02361375	31°18'29"	85°44'36"	Claybank Creek	Choctawhatchee River
2s4g	02361350	31°26'41"	85°42'12"	Bear Creek	Claybank Creek
6s6g	018900	31°14'04"	85°44'18"	Claybank Creek	Choctawhatchee River
5s1b	02360280	31°27'47"	85°34'20"	Judy Creek	Choctawhatchee River
3g	02361150	31°16'27"	85°37'11"	Little Choctawhatchee River	Choctawhatchee River
3s2b	02361000	31°20'30"	85°36'43"	Choctawhatchee River	
4s	02360500	31°22'23"	85°28'38"	Choctawhatchee River	
7s	018950	31°13'10"	85°41'22"	Choctawhatchee River	
8s	019000	31°22'00"	85°36'30"	Choctawhatchee River	
9s	019030	31°24'45"	85°32'06"	Choctawhatchee River	

Table 25

## Fort Sill

Map No.	Station Code	Coordinates		Description Location	Confluence
		Latitude	Longitude		
1g	07309000	34°46'55"	98°22'00"	East Cache Creek at Elgin, OK	Cache Creek
2g	07309480	34°49'55"	98°32'10"	Canyon Creek at Medicine Park, OK	Lake Lawtonka
3g	07309950	34°40'30"	98°23'08"	Medicine Creek at Fort Sill, OK	East Cache Creek
4g	07310000	34°43'45"	98°30'50"	Little Medicine Bluff Creek at Lawton, OK	Medicine Creek
5g	07310500	34°43'30"	98°30'00"	Medicine Bluff Creek at Lawton, OK	East Cache Creek
6g	07311200	34°37'24"	98°33'48"	Blue Beaver Creek at Cache, OK	West Cache Creek
7g	07312850	34°46'40"	98°15'25"	Nine Mile Beaver Creek at Elgin, OK	Beaver Creek



Table 26  
Fort Stewart

Map No.	Station Code	Coordinates		Description Location	Confluence
		Latitude	Longitude		
1g	2203280	32°09'00"	81°47'00"	Canoochee River nr Groveland, GA	Canoochee-Ogeechee R.
2g	2203519	31°58'59"	81°23'07"	Canoochee River at Fort Stewart	Canoochee-Ogeechee R.
3g	2225850	31°55'26"	81°52'58"	Beards Creek nr Glennville, GA	Bears Creek-Altamaha R.

Table 27  
Yakima, Washington

Map No.	Station Code	Coordinates		Description Location	Confluence
		Latitude	Longitude		
3s-11g	YAV148	46°51'22"	120°28'58"	Yakima River at Umtanum	Yakima-Columbia
6s-2g	1248490	46°46'50"	120°27'10"	Yakima River at Roza	Yakima-Columbia
9g	YAV101	46°40'41"	120°29'29"	Yakima River at Harrison Road Bridge	Yakima-Columbia
9s-4g	YAV103	46°36'22"	120°28'25"	Yakima River at Terrace Heights Bridge	Yakima-Columbia

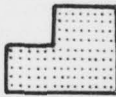



STORET STATIONS	●	INSTALLATION BOUNDARIES	————	URBAN AREAS	
HISTORICAL USGS STATIONS	○	URBAN AND CANTONMENT BOUNDARIES	————		
CURRENT USGS STATIONS	●	COUNTY BOUNDARIES	- - - - -	LAKES AND RESERVOIRS	
INTERMITTENT OR DRY STREAMS		RIVERS AND STREAMS		SMALL TOWN	○

Figure 8. Map symbols.

## 5 CONCLUSIONS AND RECOMMENDATIONS

This study has shown that certain water quality data are available at and around Army military installations. Many of these data can be obtained by installation personnel, although a great deal of effort may be required, since data are collected and maintained by several different agencies. Data collection activity has increased in recent years, so the water quality data base is continuously expanding. Data are generally available to satisfy some model input data requirements; however, installations will need to measure specific water quality data parameters to supplement existing data.

It is recommended that installation personnel use the information provided in this report to acquire water quality data from existing sources for use in environmental impact analysis.



APPENDIX A:

STORET EPA POINTS OF CONTACT

<u>Region</u>	<u>*Points of Contact</u>	<u>Regional STORET Representatives</u>
Region I	Walter M. Newman, Chief Systems Analysis Branch Environmental Protection Agency John F. Kennedy Federal Building Boston, Massachusetts 02203 (617) 223-5885	Martin Fraser (617) 223-5885
Region II	Herbert Barrack, Director Management Division Environmental Protection Agency 26 Federal Plaza New York, New York 10007 (212) 264-2520	Jack Sweeney (212) 264-0388 (FTS) 264-9850
Region III	Larry Miller, Chief Water Quality Monitoring Office Surveillance & Analysis Division Environmental Protection Agency Curtis Building 6th and Walnut Streets Philadelphia, Pennsylvania 19106 (215) 597-9823	Ted Standish (215) 597-8046
Region IV	John Marlar, Chief Technical Support Branch Environmental Protection Agency 1421 Peachtree Street, N.E. Atlanta, Georgia 30309 (404) 526-3012 (FTS) 285-3012	Dan Barber (404) 526-5989 (FTS) 285-5989
Region V	Christopher Timm, Director Surveillance & Analysis Division Environmental Protection Agency 230 S. Dearborn Street Chicago, Illinois 60604 (312) 353-6738	Stuart Ross (312) 353-2061

Region VI	David White, Chief Technical & Administration Systems Branch 1201 Elm Street First International Building Dallas, Texas 75270 (214) 749-3761	Dave White (214) 749-3761
Region VII	Walter Robohn, Federal Regional Council Representative Environmental Protection Agency 1735 Baltimore Avenue Kansas City, Missouri 64108 (816) 374-5495 (FTS) 758-5429	Dennis Degner (816) 374-2018 (FTS) 758-2018
Region VIII	Keith Schwab, Director Surveillance & Analysis Division Environmental Protection Agency 1860 Lincoln Street Suite 900 Denver, Colorado 80203 (303) 837-4935 (FTS) 327-4935	Thomas Entzminger (303) 837-2226 (FTS) 327-2226
Region IX	Clyde Eller, Director Surveillance & Analysis Division Environmental Protection Agency 100 California Street San Francisco, California 94111 (415) 556-7858	William Lewis (415) 556-7550
Region X	Dr. Gary O'Neal, Director Surveillance & Analysis Division Environmental Protection Agency 1290 6th Avenue Seattle, Washington 98101 (206) 422-1193 (FTS) 399-1295	Ray Peterson (206) 399-1580 (FTS) 399-1580

Although the names, addresses, and phone numbers of these representatives were current as of the date of this publication, they may change from time to time. Any changes to this information can be obtained by calling STORET User Assistance. Unless noted otherwise, the FTS telephone numbers of the points of contact are identical to the public numbers shown.

\*From *STORET User Handbook, Part ov, Overview* (USEPA Office of Water and Hazardous Materials).

## APPENDIX B: NAWDEX INFORMATION

### 1 NAWDEX - DIRECTORY OF LOCAL ASSISTANCE CENTERS

This directory lists each local assistance center alphabetically by state. Address, phone, hours of operation, equipment, and point of contact are listed. Copies of this directory can be obtained without charge from NAWDEX National Offices, Y21 National Center, Reston, VA 22092.

#### ALABAMA

U.S. Geological Survey  
Water Resources Division  
Room 202, Oil and Gas Board Bldg.  
Tuscaloosa, Alabama 35401  
Telephone: (205) 752-8104  
FTS: 229-2957  
Hours: 7:30 to 4:30 Central Time  
Equipment: Data 100, Model 70-1

Mailing address:  
P.O. Box V  
University, Alabama 35486

#### ALASKA

U.S. Geological Survey  
Water Resources Division  
218 E Street  
Anchorage, Alaska 99501  
Telephone: (907) 277-5526  
FTS: 399-0150 (ask operator for  
277-5526)  
Hours: 7:45 to 4:15 Alaska-Hawaii Time  
Equipment: Data 100, Model 70

#### ARIZONA

U.S. Geological Survey  
Water Resources Division  
Federal Building  
301 West Congress Street  
Tucson, Arizona 85701  
Telephone: (602) 792-6671  
FTS: 762-6671  
Telecopier: (FTS) 762-6202

Hours: 8:00 to 4:30 Mountain Time  
Equipment: Data 100, Model 70-2

ARKANSAS

U.S. Geological Survey  
Water Resources Division  
Room 2301 Federal Office Bldg.  
700 West Capitol Avenue  
Little Rock, Arkansas 72201  
Telephone: (501) 378-5246, 5247  
FTS: 740-5246, 5247  
Hours: 7:30 to 4:00 Central Time  
Equipment: Data 100, Model 70-2  
Telecopier: (FTS) 740-5228

CALIFORNIA

U.S. Geological Survey  
Water Resources Division  
855 Oak Grove Avenue  
Menlo Park, California 94025  
Telephone: (415) 323-8111, ext. 2326, 27  
FTS: 467-2326, 27  
Hours: 7:45 to 4:15 Pacific Time  
Equipment: Data 100, Model 78

COLORADO

U.S. Geological Survey  
Water Resources Division  
Building 53, Denver Federal Center  
Mail Stop 415, Box 25046  
Lakewood, Colorado 80225  
Telephone: (303) 234-3458  
FTS: 234-3458  
Hours: 8:00 to 4:30 Mountain Time  
Equipment: Data 100, Model 78

CONNECTICUT

U.S. Geological Survey  
Water Resources Division  
135 High street, Room 235  
Hartford, Connecticut 06103  
Telephone: (203) 244-2528  
FTS: 244-2528  
Hours: 8:30 to 5:00 Eastern Time



Equipment: Data 100, Model 70-1

Mailing address:

P.O. Box 715

Hartford, Connecticut 06101

DELAWARE (See U.S. Geological  
Survey Office in Maryland)

FLORIDA

U.S. Geological Survey

Water Resources Division

325 John Knox Road

Suite F-240

Tallahassee, Florida 32303

Telephone: (904) 386-1118

FTS: 946-4251

Hours: 7:45 to 4:30 Eastern Time

Equipment: Data 100, Model 70-2

U.S. Geological Survey

Water Resources Division

901 S. Miami Avenue

Miami, Florida 33130

Telephone: (305) 350-5382

FTS: 350-5382

Telecopier: (FTS) 350-5382

Hours: 7:45 to 4:30 Eastern Time

Equipment: Data 100, Model 78

U.S. Geological Survey

Water Resources Division

80 N. Hughey Avenue

Suite 216, Federal Building

Orlando, Florida 32801

Telephone: (305) 420-6191

FTS: 820-6191

Telecopier: 820-6191

Hours: 7:45 to 4:30 Eastern Time

Equipment: Data 100, Model 70-2

U.S. Geological Survey

Water Resources Division

4710 Eisenhower Blvd.

Suite B-5

Tampa, Florida 33614

Telephone: (813) 228-2124

FTS: 826-2124 (Data Section 2831)  
Hours: 7:45 to 4:30 Eastern Time  
Equipment: Data 100, Model 70-1  
Telecopier: (FTS) 826-2124

#### GEORGIA

U.S. Geological Survey  
Water Resources Division  
6481 Peachtree Industrial Blvd.  
Suite B  
Doraville, Georgia 30340  
Telephone: (404) 221-4858  
FTS: 242-4858  
Hours: 7:45 to 4:30 Eastern Time  
Equipment: Data 100, Model 78

#### HAWAII

U.S. Geological Survey  
Water Resources Division  
1833 Kalakaua Avenue  
5th Floor  
Honolulu, Hawaii 96815  
Telephone: (808) 955-0251  
FTS: 556-0220 (ask operator for  
955-0251)  
Hours: 7:45 to 4:15 Alaska-Hawaii Time

#### IDAHO

U.S. Geological Survey  
Water Resources Division  
P.O. Box 036  
Room 365, Federal Building  
550 W. Fort Street  
Boise, Idaho 83724  
Telephone: (208) 384-1750  
FTS: 554-1750  
Hours: 7:45 to 4:15 Mountain Time  
Equipment: Data 100, Model 70-1

#### ILLINOIS

U.S. Geological Survey  
Water Resources Division  
605 N. Neil Street  
Champaign, Illinois 61820

Telephone: (217) 359-3918  
FTS: 958-9137, 9143  
Hours: 8:00 to 4:30 Central Time  
Equipment: Data 100, Model 70-1

Mailing address:  
P.O. Box 1026  
Champaign, Illinois 61820

#### INDIANA

U.S. Geological Survey  
Water Resources Division  
1819 North Meridian Street  
Indianapolis, Indiana 46202  
Telephone: (317) 269-7118  
FTS: 331-7118  
Hours: 7:45 to 4:15 Eastern Time  
Equipment: Data 100, Model 70-2

#### IOWA

U.S. Geological Survey  
Water Resources Division  
Room 269, Federal Building  
400 South Clinton  
Iowa City, Iowa 52240  
Telephone: (319) 338-0581  
FTS: 863-6521  
Hours: 7:30 to 4:15 Central Time  
Equipment: PDP-8  
c/o Iowa Geological Survey  
123 N. Capitol Street  
Iowa City, Iowa 52240  
Telephone: (319) 338-1173  
Mailing address:  
P.O. Box 1230  
Iowa City, Iowa 52240

#### KANSAS

U.S. Geological Survey  
Water Resources Division  
1950 Avenue "A" - Campus West  
University of Kansas  
Lawrence, Kansas 66045  
Telephone: (913) 864-4321  
FTS: 752-2302

Telecopier: 752-2300 (manual)  
Hours: 8:00 to 5:00 Central Time  
Equipment: Data 100, Model 78

KENTUCKY

U.S. Geological Survey  
Water Resources Division  
Room 572, Federal Building  
600 Federal Place  
Louisville, Kentucky 40202  
Telephone: (502) 582-5241  
FTS: 352-5241  
Telecopier: 352-5101  
Hours: 8:00 to 4:45 Eastern Time  
Equipment: Data 100, Model 70-1

LOUISIANA

U.S. Geological Survey  
Water Resources Division  
6554 Florida Boulevard  
Baton Rouge, Louisiana 70806  
Telephone: (504) 387-1081, ext. 281  
FTS: 687-4281  
MagnaFax copier, manual: (FTS) 687-4281  
Hours: 7:45 to 4:30 Central Time  
Equipment: Data 100, Model 70-1

Mailing address:  
P.O. Box 66492  
Baton Rouge, Louisiana 70806

MAINE (See U.S. Geological Survey  
Office in Massachusetts)

MARYLAND

U.S. Geological Survey  
Water Resources Division  
(includes Delaware and  
District of Columbia)  
208 Carroll Building  
8600 LaSalle Road  
Towson, Maryland 21204  
Telephone: (301) 828-1535  
FTS: 920-3311 (ask operator for  
301-828-1535)



Hours: 7:45 to 4:15 Eastern Time  
Equipment: Data 100, Model 70-1

MASSACHUSETTS

U.S. Geological Survey  
Water Resources Division  
(includes Maine, Massachusetts,  
New Hampshire, Rhode Island, and  
Vermont)  
150 Causeway Street, Suite 1001  
Boston, Massachusetts 02114  
Telephone: (617) 223-2822  
FTS: 223-2822  
Hours: 8:30 to 5:00 Eastern Time  
Equipment: Data 100, Model 70-1

MICHIGAN

U.S. Geological Survey  
Water Resources Division  
2400 Science Parkway  
Red Cedar Research Park  
Okemos, Michigan 48864  
Telephone: (517) 372-1910, ext. 561  
FTS: 374-1561  
Hours: 7:45 to 4:15 Eastern Time  
Equipment: Data 100, Model 70-1

MINNESOTA

U.S. Geological Survey  
Water Resources Division  
1033 Post Office Building  
St. Paul, Minnesota 55101  
Telephone: (612) 725-7841  
FTS: 725-7841  
Hours: 7:45 to 4:30 Central Time  
Equipment: Cope 1200

MISSISSIPPI

U.S. Geological Survey  
Water Resources Division  
430 Bounds Street  
Jackson, Mississippi 39206  
Telephone: (601) 969-4600  
FTS: 490-4600

Hours: 7:45 to 4:30 Central Time  
Equipment: Data 100, Model 70-1

#### MISSOURI

U.S. Geological Survey  
Water Resources Division  
1400 Independence Road  
Mail Stop 200  
Rolla, Missouri 65401  
Telephone: (314) 364-3680, ext. 185  
FTS: 276-9185, 9186  
Hours: 7:45 to 4:15 Central Time  
Equipment: Systems Eng. Laboratories  
Model 86 (2780 Type)  
Telecopier: 276-9177 (auto/manual)

#### MONTANA

U.S. Geological Survey  
Water Resources Division  
421 Federal Building  
P.O. Box 1691  
316 N. Park Avenue  
Helena, Montana 59601  
Telephone: (406) 449-5263, ext. 5263  
FTS: 585-5263  
Terminal No. (FTS) 585-3450  
Hours: 7:45 to 4:30 Mountain Time  
Equipment: Data 100, Model 70-1  
Facsimile FTS 585-5260

#### NEBRASKA

U.S. Geological Survey  
Water Resources Division  
Room 406, Federal Building and  
U.S. Court House  
100 Centennial Mall, N.  
Lincoln, Nebraska 68508  
Telephone: (402) 471-5082  
FTS: 867-5082  
Hours: 7:45 to 4:30 Central Time  
Equipment: Data 100, Model 70-1

#### NEVADA

U.S. Geological Survey  
Water Resources Division  
Room 227, Federal Building  
705 North Plaza Street  
Carson City, Nevada 89701  
Telephone: (702) 882-1388  
FTS: 470-5911 (ask operator for  
882-1388, 1389)  
Hours: 7:45 to 4:45 Pacific Time  
Equipment: IBM Mag Card

NEW HAMPSHIRE (see U.S. Geological  
Survey Office in Massachusetts)

#### NEW JERSEY

U.S. Geological Survey  
Water Resources Division  
Room 420, Federal Building  
402 East State Street  
Trenton, New Jersey 08608  
Telephone: (609) 989-2162  
FTS: 483-2162  
Hours: 8:00 to 4:30 Eastern Time  
Equipment: Data 100, Model 70-1

Mailing address:  
P.O. Box 1238  
Trenton, New Jersey 08608

#### NEW MEXICO

U.S. Geological Survey  
Water Resources Division  
Western Bank Building, Room 815  
505 Marquette, N.W.  
Albuquerque, New Mexico 87102  
Telephone: (505) 766-2246  
FTS: 474-2246  
Hours: 7:45 to 4:45 Mountain Time  
Equipment: Data 100, Model 78

Mailing address:  
P.O. Box 26659  
Albuquerque, New Mexico 87125

NEW YORK

U.S. Geological Survey  
Water Resources Division  
5 Aerial Way  
Syosset, New York 11791  
Telephone: (516) 938-8830  
FTS: 264-3311 (ask operator for  
516-938-8830)  
Hours: 7:45 to 4:30 Eastern Time  
Equipment: Data 100, Model 70-2

Mailing address:  
P.O. Box 1350  
Albany, New York 12201

U.S. Geological Survey  
Water Resources Division  
1505 Kellum Place  
Mineola, New York 11501  
Telephone: (516) 746-3750  
FTS: 662-8000 (ask operator for  
516-746-3750)  
Hours: 7:45 to 4:30 Eastern Time  
Equipment: Data 100, Model 70-2

NORTH CAROLINA

U.S. Geological Survey  
Water Resources Division  
Room 436, Century Station Post Office  
Building  
Raleigh, North Carolina 27602  
Telephone: (919) 755-4510  
FTS: 672-4510  
Hours: 8:00 to 4:45 Eastern Time  
Equipment: Data 100, Model 70-1

Mailing address:  
P.O. Box 2857  
Raleigh, North Carolina 27602

NORTH DAKOTA

U.S. Geological Survey  
Water Resources Division  
Room 332, New Federal Building  
Third Street & Rosser Avenue



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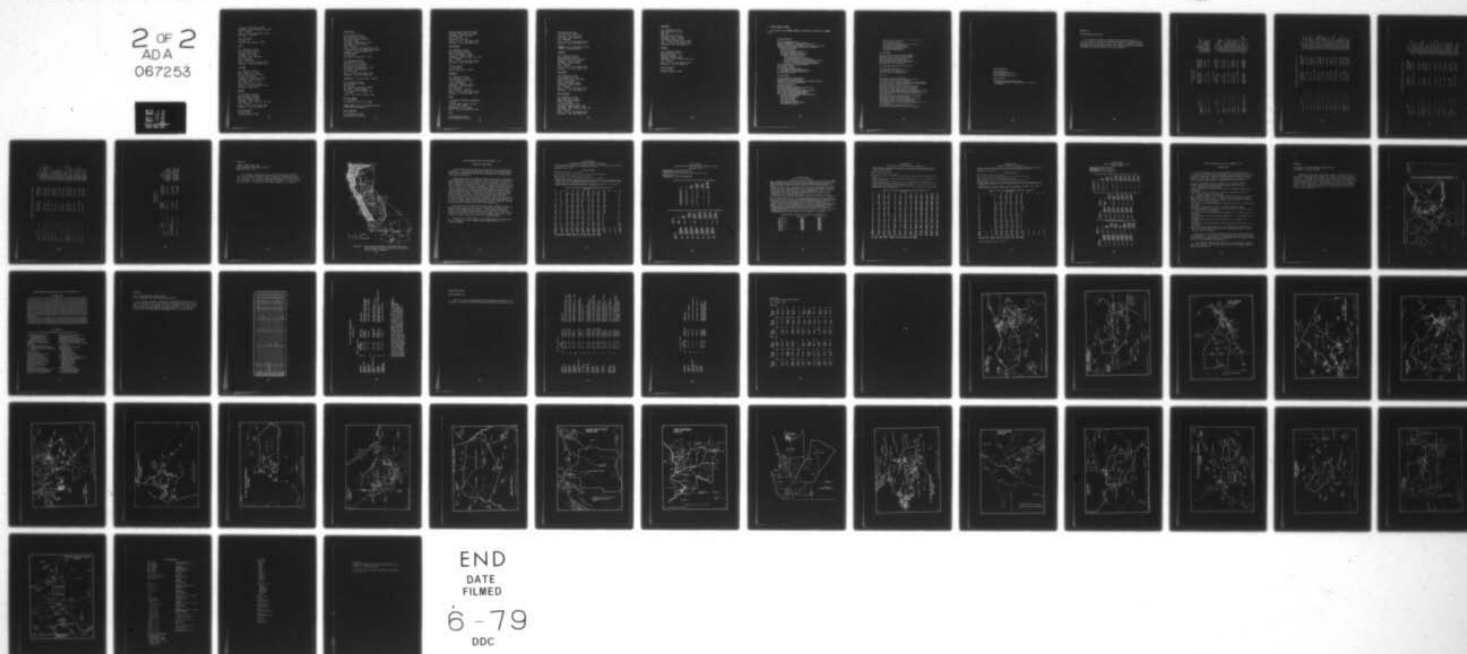
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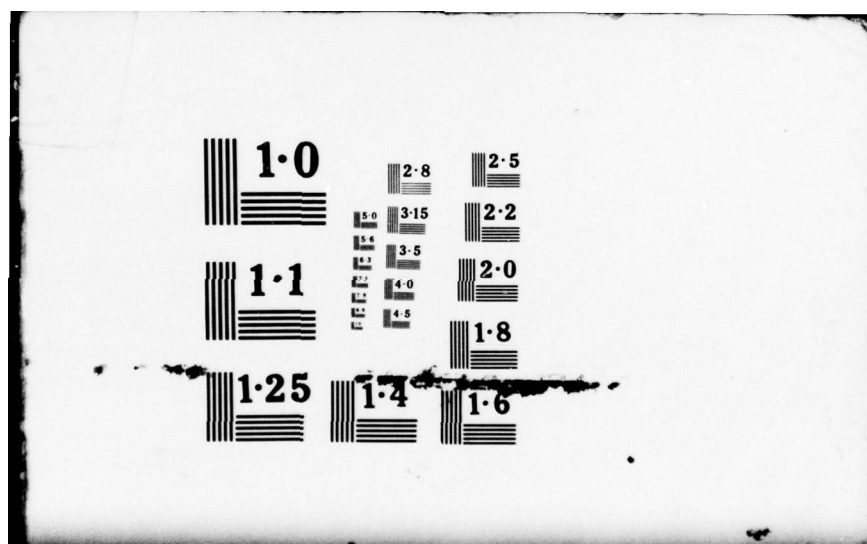
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Bismarck, North Dakota 58501  
Telephone: (701) 255-4011, ext. 496  
FTS: 783-4496  
Hours: 8:00 to 5:00 Central Time  
Equipment: IBM 2780

Mailing address:  
P.O. Box 778  
Bismarck, North Dakota 58501

#### OHIO

U.S. Geological Survey  
Water Resources Division  
975 West Third Avenue  
Columbus, Ohio 43212  
Telephone: (614) 469-5553  
FTS: 943-5553  
(TWX) 810-482-1662  
Hours: 7:45 to 4:30 Eastern Time  
Equipment: Data 100, Model 70-1

#### OKLAHOMA

U.S. Geological Survey  
Water Resources Division  
621 Old Post Office Building  
201 N.W. 3rd Street  
Oklahoma City, Oklahoma 73102  
Telephone: (405) 231-4256  
FTS: 736-4256  
Telecopier: (FTS) 736-4575  
Hours: 8:00 to 4:45 Central Time  
Equipment: Cope 1200

#### OREGON

U.S. Geological Survey  
Water Resources Division  
830 N.E. Holladay Street  
Portland, Oregon 97232  
Telephone: (503) 234-3361, ext. 4797  
FTS: 429-4797  
Hours: 7:30 to 4:15 Pacific Time  
Equipment: Data 100, Model 78

Mailing address:  
P.O. Box 3202  
Portland, Oregon 97208

#### PENNSYLVANIA

U.S. Geological Survey  
Water Resources Division  
4th Floor, Federal Building  
228 Walnut Street  
Harrisburg, Pennsylvania 17101  
Telephone: (717) 782-3420  
FTS: 590-3420  
Hours: 8:00 to 4:40 Eastern Time (for  
both Harrisburg & Philadelphia offices)  
Equipment: Data 100, Model 70-2  
Mailing address:  
P.O. Box 1107  
Harrisburg, Pennsylvania 17108

U.S. Geological Survey  
Water Resources Division  
Room 607, U.S. Custom House  
2nd and Chestnut Streets  
Philadelphia, Pennsylvania 19106  
Telephone: (215) 597-7366  
FTS: 597-7366  
Hours: 8:00 to 4:40 Eastern Time  
Equipment: Data 100, Model 70-2

#### PUERTO RICO (includes Virgin Islands)

U.S. Geological Survey  
Water Resources Division  
Building 652  
Ft. Buchanan, Puerto Rico 00934  
Telephone: (809) 783-4660  
FTS: 967-1221 (ask operator for  
753-4414)  
Hours: 7:45 to 4:30 Atlantic Time

Mailing address:  
P.O. Box 34168  
Ft. Buchanan, Puerto Rico 00934

#### RHODE ISLAND (see U.S. Geological Survey Office in Massachusetts)

#### SOUTH CAROLINA

U.S. Geological Survey  
Water Resources Division



2001 Assembly Street, Suite 200  
Columbia, South Carolina 29201  
Telephone: (803) 765-5966  
FTS: 677-5966  
Telecopier: 677-5372  
Hours: 7:45 to 4:15 Eastern Time  
Equipment: Data 100, Model 70-1

#### SOUTH DAKOTA

U.S. Geological Survey  
Water Resources Division  
Room 231, Federal Building  
Huron, South Dakota 57350  
Telephone: (605) 352-8651, ext. 258  
FTS: 782-2258  
Hours: 8:00 to 5:00 Central Time  
Equipment: Data 100, Model 74-1

Mailing address:  
P.O. Box 1412  
Huron, South Dakota 57350

#### TENNESSEE

U.S. Geological Survey  
Water Resources Division  
A-413 Federal Building and  
U.S. Courthouse  
Nashville, Tennessee 37203  
Telephone: (615) 749-5424  
FTS: 852-5424  
GSA Telecopier: 852-5311  
Hours: 7:45 to 4:30 Central Time  
Equipment: Data 100, Model 70-1

#### TEXAS

Texas Natural Resources Information  
System  
P.O. Box 13087, Capitol Station  
Austin, Texas 78711  
Telephone: (512) 475-3321  
Hours: 8:00 to 5:00 Central Time

#### UTAH

U.S. Geological Survey  
Water Resources Division

8002 Federal Building  
125 South State Street  
Salt Lake City, Utah 84138  
Telephone: (801) 524-5654  
FTS: 588-5654  
Hours: 8:00 to 4:30 Mountain Time  
Equipment: Data 100, Model 70-1

VERMONT (see U.S. Geological Survey  
Office in Massachusetts)

#### VIRGINIA

U.S. Geological Survey  
Water Resources Division  
200 West Grace Street, Room 304  
Richmond, Virginia 23220  
Telephone: (804) 782-2427  
FTS: 925-2427  
Hours: 8:00 to 4:45 Eastern Time  
Equipment: Data 100, Model 70-2

#### WASHINGTON

U.S. Geological Survey  
Water Resources Division  
1 Washington Plaza, Suite 600  
1201 Pacific Avenue  
Tacoma, Washington 98402  
Telephone: (206) 593-6510  
FTS: 390-6510  
Hours: 7:45 to 4:30 Pacific Time  
Equipment: Data 100, Model 78

#### WEST VIRGINIA

U.S. Geological Survey  
Water Resources Division  
Room 3017, Federal Bldg. &  
U.S. Courthouse  
500 Quarrier Street, East  
Charleston, West Virginia 25301  
Telephone: (304) 343-6181, ext. 310  
FTS: 924-1310  
Hours: 7:45 to 4:30 Eastern Time  
Equipment: Data 100, Model 70-1

WISCONSIN

U.S. Geological Survey  
Water Resources Division  
Room 200  
1815 University Avenue  
Madison, Wisconsin 53706  
Telephone: (608) 263-4597  
FTS: 262-2488 (ask for ext. 4597)  
Hours: 8:00 to 4:30 Central Time  
Equipment: Data 100, Model 70-1

WYOMING

U.S. Geological Survey  
Water Resources Division  
4020 House Avenue  
Cheyenne, Wyoming 82001  
Telephone: (307) 778-2220, ext. 2111  
FTS: 328-2111  
Hours: 8:00 to 4:30 Mountain Time  
Equipment: Data 100, Model 78

Mailing address:  
P.O. Box 2087  
Cheyenne, Wyoming 82001



## 2 CURRENT NAWDEX MEMBERS

This section lists NAWDEX members by name only current as of summer 1977.

### Federal Organizations

Agricultural Research Service  
Bureau of Land Management, Oregon State Office  
Bureau of Reclamation, U. S. Department of the Interior  
Cooperative Instream Flow Service Group, U.S. Fish and Wildlife Service  
National Oceanic and Atmospheric Administration, including:  
    National Weather Service  
    National Ocean Survey  
    National Marine Fisheries Service  
    National Environmental Satellite Service  
    Environmental Research Laboratories  
    Environmental Data Service, including:  
        The National Climatic Center  
        The National Oceanographic Data Center  
        The Environmental Science Information Center  
        The National Geophysical and Solar-Terrestrial Data Center  
        The Center for Experiment Design and Data Analysis  
        The Center for Climatic and Environmental Assessment  
Office of Water Research and Technology, USDI  
Soil Conservation Service  
Tennessee Valley Authority  
U.S. Environmental Protection Agency  
U.S. Environmental Protection Agency (Region V)  
U.S. Geological Survey, Water Resources Division  
U.S. Water Resources Council

### State Organizations

California Department of Water Resources  
Colorado Division of Water Resources  
Commonwealth of Pennsylvania, Department of Environmental Resources  
Illinois Institute of Environmental Quality  
Illinois State Water Survey  
Iowa Geological Survey  
North Dakota Geological Survey  
North Dakota Regional Environmental Assessment Program  
North Dakota State Water Commission  
State of Alaska, Department of Environmental Conservation  
State of Nebraska, Natural Resources Commission  
State of Ohio Environmental Protection Agency  
Texas Natural Resources Information System, representing:  
    Texas Water Development Board  
    Texas General Land Office  
    Texas Air Control Board  
    Texas Forest Service  
    Texas Industrial Commission  
    Texas Department of Health Resources  
    Texas Water Quality Board



Bureau of Economic Geology, University of Texas at Austin  
Railroad Commission of Texas  
Texas Department of Agriculture  
Texas Department of Highways and Public Transportation  
Texas Parks and Wildlife Department  
Texas State Soil and Conservation Board  
Texas Water Rights Commission  
Texas Coastal and Marine Council

#### Local Government

Board of Water Supply, City and County of Honolulu  
Department of Public Utilities, City of Shreveport, LA  
Hetch Hetchy Water and Power (San Francisco, CA)  
Merced Irrigation District (Merced, CA)  
Metropolitan District Water Bureau (Hartford, CT)  
Reedy Creek Improvement District (Lake Buena Vista, FL)  
Water Department, City of Lake Mary, FL

#### Interstate Organizations (River Basin Commissions)

Great Lakes Basin Commission  
Ohio River Valley Water Sanitation Commission  
Susquehanna River Basin Commission  
Upper Mississippi River Basin Commission

#### Universities

Duke University, School of Engineering  
Environmental Resources Center, Colorado State University  
Water Resources Center, University of Delaware  
Kurt F. Wendt Library, College of Engineering, University of Madison, WI  
University of Arizona, College of Business and Public Administration  
Water Resources Center, University of Illinois  
Water Resources Research Institute, University of Kentucky  
Water Resources Research Center, University of Minnesota  
Water Resources Research Center, University of Missouri  
Water Resources Center, Desert Research Institute, University of Nevada  
Water Resources Research Center, University of New Hampshire  
Southern Water Resources Scientific Information Center, University of  
North Carolina  
Water Resources Research Institute, University of North Dakota  
Water Resources Center, Ohio State University  
Water Resources Research Institute, University of Puerto Rico  
Water Resources Center, University of Rhode Island  
Water Resources Institute, South Dakota State University  
Water Resources Research Institute, Virginia Polytechnic Institute and  
State University  
Water Research Center, Washington State University  
Water Resources Research Institute, University of Wyoming

Private Organizations

Carborundum Company  
Electric Power Research Institute  
Gidley Laboratories, Inc.  
TenEch Environmental Consultants, Inc.

Foreign Affiliates

Water Resources Document Reference Centre,  
Inland Waters Directorate, Canadian Department of Fisheries and  
the Environment

## APPENDIX C:

### WATER RESOURCES DIVISION

This appendix provides a directory of the Water Resources Division's state by state district offices and the four regional offices that are points of contact for Water Year Reports and Water Resources Investigation Reports; these offices also provide information on NAWDEX, WATSTORE, and the USGS monitoring station programs.

WATER RESOURCES DIVISION  
REGIONAL OFFICES

<u>Region</u>	<u>Regional Hydrologist</u>	<u>Telephone Number</u>	<u>Address</u>
Northeastern.....	Joseph T. Callahan	(703) 860-6985	National Center, STOP 433
Southeastern.....	Leslie B. Laird	(404) 881-4395	1459 Peachtree St. NE., Suite 200, Atlanta, GA 30392
Central.....	Alfred Clebsch, Jr.	(303) 234-3661	Box 25046, STOP 406, Denver Federal Center, Denver, CO 80225
Western.....	William H. Robinson	(415) 323-8111	345 Middlefield Rd., Menlo Park, CA 94025

DISTRICT OFFICES

<u>State</u>	<u>District Chief</u>	<u>Telephone Number</u>	<u>Address</u>
Alabama.....	William J. Powell	(205) 752-8104	P.O. Box V, 202 Oil and Gas Board Bldg., University of Alabama, University, AL 35496 218 E St., Anchorage, AK 99501
Alaska.....	Harry Hulsing	(907) 277-5526	Federal Bldg., 301 W. Congress St., Tucson, AZ 85701
Arizona.....	Horace M. Babcock	(602) 792-6671	2301 Federal Office Bldg., 700 W. Capital Ave., Little Rock, AR 72201
Arkansas.....	Richard T. Sniegocki	(501) 378-5246	855 Oak Grove Ave., Menlo Park, CA 94025
California.....	Lee R. Peterson	(415) 323-8111 ext. 2326	Box 25046, STOP 415, Denver Federal Center, Denver, CO 80225
Colorado.....	James E. Biesecker	(303) 234-5092	P.O. Box 715, 235 Post Office Bldg., 135 High St., Hartford, CT 06101
Connecticut.....	Frederick H. Ruggles, Jr.	(203) 244-2528	See Maryland District Office
Delaware.....	Walter F. White, Jr.	(301) 828-1535	See Maryland District Office
District of Columbia.....	Walter F. White, Jr.	(301) 828-1535	325 John Knox Rd., Suite F-240
Florida.....	Clyde S. Conover	(904) 386-1118	Tallahassee, FL 32303



WATER RESOURCES DIVISION DISTRICT OFFICES -- CONTINUED

<u>State</u>	<u>District Chief</u>	<u>Telephone Number</u>	<u>Address</u>
Georgia.....	John R. George	(404) 526-4858	6481 Peachtree Industrial Blvd., Doraville, GA 30340
Hawaii.....	Frank T. Hidaka	(808) 955-0251	1833 Kalkaua Ave., 5th Floor, Honolulu, HI 96815
Idaho.....	Edwin E. Harris	(208) 384-1750, ext. 2537	Box 035, 365 Federal Bldg., 550 W. Fort St., Boise, ID 83724
Illinois.....	Lawrence A. Martens	(217) 359-3918	P.O. Box 1026 605 N. Neil St., Champaign, IL 61820
Indiana.....	James L. Cook	(317) 269-7101	1819 N. Meridian St., 46202
Iowa.....	Sulo W. Mittala	(319) 338-0581, ext. 521	Indianapolis, IN 46202 P.O. Box 1230, 269 Federal Bldg., Iowa City, IA 52240
Kansas.....	J. S. Rosenshein	(913) 864-4321	1950 Ave. A-Campus West, University of Kansas, Lawrence, KS 66045
Kentucky.....	Philip A. Emery	(502) 582-5241	572 Federal Bldg., 600 Federal Pl., Louisville, KY 40202
Louisiana.....	Albert N. Cameron	(504) 387-0121, ext. 281	P.O. Box 66492 6554 Florida Blvd., Baton Rouge, LA 70896
Maine.....	John A. Baker	(617) 223-2822	See Massachusetts District Office
Maryland.....	Walter F. White, Jr.	(301) 828-1535	208 Carroll Bldg., 8600 La Salle Rd., Towson, MD 21204
Michigan.....	T. Ray Cummings	(517) 372-1910, ext. 561	2400 Science Parkway, Red Cedar Research Park, Okemos, MI 48864
Minnesota.....	Charles R. Collier	(612) 725-7841	1033 Post Office Bldg., St. Paul, MN 55101
Mississippi.....	Lamar E. Carroon	(601) 969-4600	430 Bounds St., Jackson, MS 39206
Missouri.....	Anthony Honyk	(314) 361-3680, ext. 185	1400 Independence Rd., Rolla, MO 65401

WATER RESOURCES DIVISION DISTRICT OFFICES -- CONTINUED

State	District Chief	Telephone Number	Address
Montana.....	George M. Pike	(406) 449-5011, ext. 5263	P.O. Box 1696, 421 Federal Bldg., Helena, MT 59601
Nebraska.....	Kenneth A. Mac Kichan	(402) 471-5082	406 Federal Bldg. and U.S. Courthouse, 100 Centennial Mall North, Lincoln, NE 68503
Nevada.....	John P. Montis	(702) 882-1388	227 Federal Bldg., 705 N. Plaza St., Carson City, NV 89701
New Hampshire.....	John A. Baker	(617) 223-2822	See Massachusetts District Office.
New Jersey.....	Harold Meister	(609) 599-7511 ext. 212	P.O. Box 1238, 420 Federal Bldg., 402 E. State St., Trenton, NJ 08607
New Mexico.....	William E. Hale	(505) 766-2246	P.O. Box 26659, Western Bank Bldg., Rm. 815, 505 Marquette NW, Albuquerque, NM 87125
New York.....	Robert J. Dingman	(518) 472-3107	P.O. Box 1350, 343 U.S. Post Office and Courthouse Bldg., Albany, NY 12201
North Carolina.....	Ralph C. Heath	(919) 755-4510	P.O. Box 2857, 436 Century Station P.O. Bldg., Raleigh, NC 27602
North Dakota.....	Walter R. Scott	(701) 255-4011, ext. 227	P.O. Box 778, 332 New Federal Bldg., 3d St. and Rosser Ave., Bismarck, ND 58501
Ohio.....	James F. Blakey	(614) 469-5553	975 West Third Ave., Columbus, OH 43212
Oklahoma.....	James H. Irwin	(405) 231-4256	201 NW 3d St., Rm. 621, Oklahoma City, OK 73102
Oregon.....	Stanley F. Kapustka	(503) 234-3361, ext. 4776	P.O. Box 3202, 920 NE Holladay St., Portland, OR 97208

WATER RESOURCES DIVISION DISTRICT OFFICES -- CONTINUED

<u>State</u>	<u>District Chief</u>	<u>Telephone Number</u>	<u>Address</u>
Pennsylvania.....	Norman H. Beamer	(717) 782-3468	P.O. Box 1107, 4th Floor, Federal Bldg., 228 Walnut St., Harrisburg, Pa. 17108
Puerto Rico.....	Ernest D. Cobb	(809) 783-4660	P.O. Box 34168, Bldg. 652, Ft. Buchanan, PR 00934 See Massachusetts District Office
Rhode Island.....	John A. Baker	(617) 223-2822	
South Carolina.....	John S. Stallings	(803) 765-5966	2001 Assembly St., Suite 200, Columbia, SC 29201
South Dakota.....	John E. Powell	(605) 352-8651, ext. 258	P.O. Box 1412, 231 Federal Bldg., Huron, SD 57350
Tennessee.....	Stanley P. Sauer	(615) 749-5424	A-413 Federal Bldg., U.S. Courthouse, Nashville, TN 37203
Texas.....	I. Dale Yost	(512) 397-5766	649 Federal Bldg., 300 E. 8th St., Austin, TX 78701
Utah.....	Theodore Arnow	(801) 524-5663	8002 Federal Bldg., 125 S. State St., Salt Lake City, UT 84138
Vermont.....	John A. Baker	(617) 223-2822	See Massachusetts District Office
Virginia.....	William E. Forrest	(804) 782-2427	200 W. Grace St., Rm. 304, Richmond, VA 23220
Washington.....	John E. McCall	(206) 593-6510	1305 Tacoma Ave. S., Rm. 300, Tacoma, WA 98402
West Virginia.....	David H. Appel	(304) 343-6181	3303 Federal Bldg. and U.S. Courthouse, 500 Quarrier St. E., Charleston, WV 25301
Wisconsin.....	William W. Barnwell	(608) 262-2488	1815 University Ave., Rm. 200, Madison, WI 53706
Wyoming.....	Samuel W. West	(307) 778-2220, ext. 2111	P.O. Box 2087 4015 Warren Ave., Cheyenne, WY 82001

CONSERVATION DIVISION  
REGIONAL OFFICES

<u>Region</u>	<u>Conservation Manager</u>	<u>Telephone Number</u>	<u>Address</u>
Eastern.....	George Brown	(202) 254-3137	1725 K St., NW., Suite 213, Washington, DC 20244
Central.....	George H. Horn	(303) 234-2855	Box 25046, STOP 609, Denver Federal Center, Denver, CO 80225
Gulf of Mexico Outer Continental Shelf Operations.....	A. Dewey Acuff	(504) 837-4720, ext. 9381	P.O. Box 7944 434 Imperial Office Bldg., 3301 N. Causeway Blvd., Metairie, LA 70011
Western.....	Willard C. Gere	(415) 323-8111, ext. 2563	345 Middlefield Rd., Menlo Park, CA 94025



APPENDIX D:

EXAMPLE FORMAT PAGES FROM  
WATER RESOURCES DATA FOR CALIFORNIA,  
WATER YEAR 1976, VOL 2

This appendix provides a map (Figure D1) showing how volumes of data are divided by watersheds; also provided are cooperating agencies in the Volume 2 area, a brief summary of hydrologic conditions in the area, and data, as formatted in the Water Year Reports, for Stations 4g, 5g, and 4s-9g as illustrated on the Hunter-Liggett map in Chapter 3.

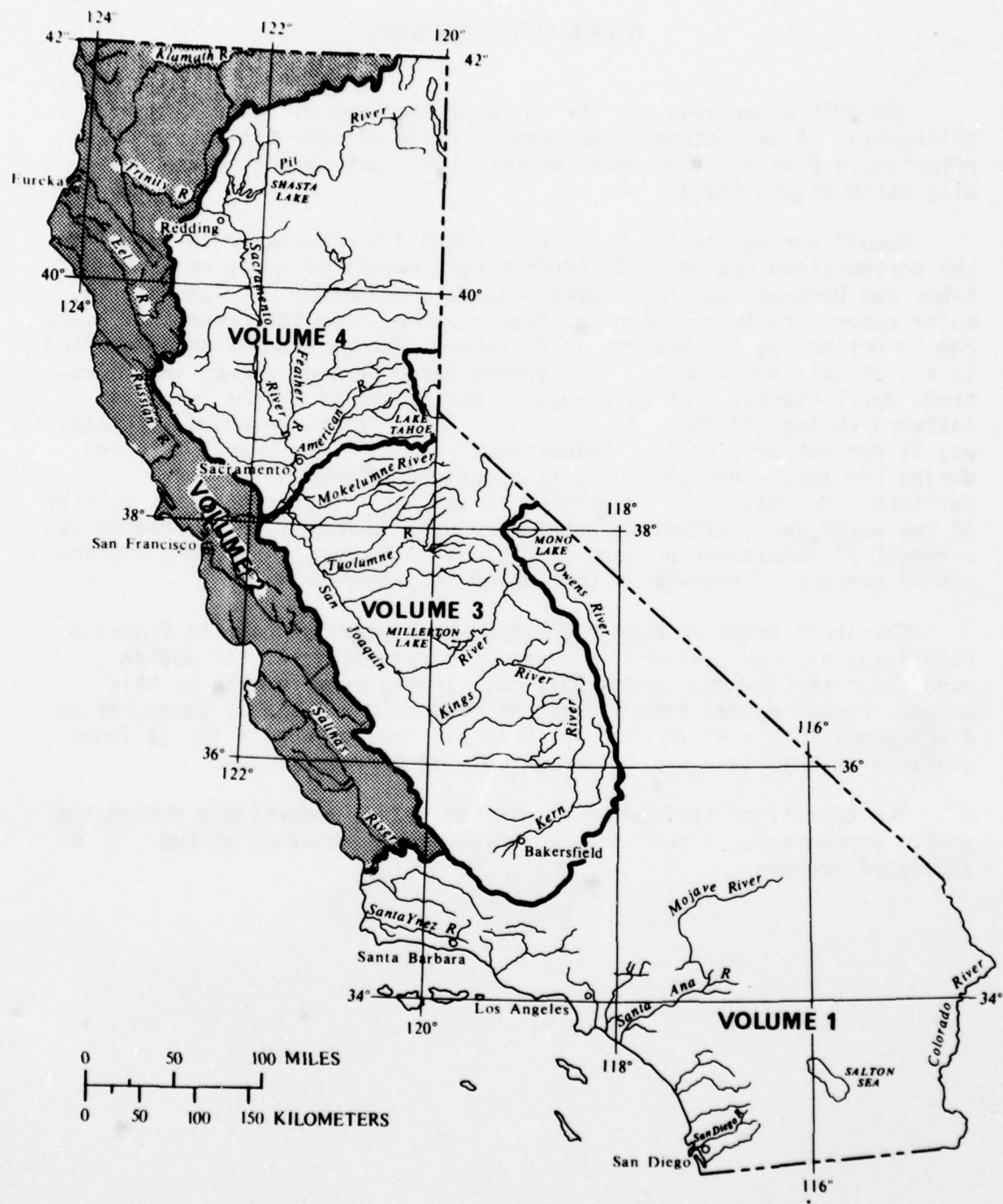


Figure D1. Area covered by volumes in the annual series on water resources data for California (area covered by this volume is shaded).

## WATER RESOURCES DATA FOR CALIFORNIA, 1976

### HYDROLOGIC CONDITIONS

The 1976 water year was the third driest year of this century in California. A persistent high-pressure ridge off the California coast effectively displaced the usual winter storm path onto a course generally north of the State.

Runoff during the first quarter ranged from excessive to normal in the northwestern region of California as a result of heavy rains in October and December and near-normal rainfall in November. Contents in major reservoirs in northern California varied from 126 percent of average in October to 110 percent in December. Drought conditions prevailed in all of California during the January-March period, except in the extreme north-coastal area which was on the fringe of storms sweeping eastward through Oregon. At the end of this period, reservoir storage was 91 percent of average. Below-normal rainfall and runoff occurred during the April-June period, with reservoir storage in northern California decreasing to 72 percent of average. During the last quarter of the water year, excessive runoff occurred in August and September as a result of unseasonable storm conditions in August. Reservoir storage was 67 percent of average at the end of the water year.

The areal trend in runoff for the water year is shown in figure 3. Runoff at selected stations is given as a percentage of the median runoff for the 30-year period 1941-70. In the area covered by this volume, runoff ranged from 80 percent from Salmon River at Somes Bar to 7 percent for Napa River near St. Helena. Average runoff for 11 index stations in this area was 37 percent of the 30-year median.

The quality of surface water did not change appreciably during the year. Ground-water levels dropped below average because of the increased demand.



# SALINAS RIVER BASIN

11148900 NACIMIENTO RIVER BELOW SAPAQUE CREEK, NEAR BRYSON, CA

LOCATION.--Lat 35°47'19", long 121°05'34", in SW¼NE¼ sec.3, T.25 S., R.8 E., San Luis Obispo County, on left bank just downstream from Sapaque Creek, 1.4 mi (2.3 km) south of Bryson.

DRAINAGE AREA.--156 mi<sup>2</sup> (404 km<sup>2</sup>).

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1971 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 800 ft (244 m), from topographic map.

REMARKS.--Records good. No storage or diversion above station.

AVERAGE DISCHARGE.--5 years, 185 ft<sup>3</sup>/s (5.239 m<sup>3</sup>/s), 134,000 acre-ft/yr (165 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 37,600 ft<sup>3</sup>/s (1,060 m<sup>3</sup>/s) Feb. 2, 1975, gage height, 25.80 ft (7.864 m), from rating curve extended above 4,100 ft<sup>3</sup>/s (116 m<sup>3</sup>/s) on basis of slope-area measurement at gage height 16.84 ft (5.133 m); no flow for several months in each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 688 ft<sup>3</sup>/s (19.5 m<sup>3</sup>/s) Mar. 1, gage height, 11.13 ft (3.392 m), no peak above base of 10,000 ft<sup>3</sup>/s (280 m<sup>3</sup>/s), revised; no flow many days.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1975 TO SEPTEMBER 1976 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0	4.4	4.4	5.2	4.4	312	9.9	8.6	.80			0
2	0	3.5	4.7	5.0	4.4	217	9.9	8.1	.71			0
3	0	2.9	5.0	5.0	4.4	246	10	7.3	.62			0
4	0	2.8	5.0	5.0	4.2	120	11	6.9	.54			0
5	0	2.6	5.0	5.2	5.2	82	13	6.9	.37			0
6	0	2.4	5.2	5.2	6.7	64	13	6.5	.32			0
7	0	2.2	5.2	5.5	9.6	54	13	6.9	.28			0
8	0	2.2	5.2	5.5	20	46	19	6.5	.21			0
9	0	2.1	5.2	5.5	152	41	30	6.1	.19			0
10	.04	2.0	5.2	5.5	84	37	25	5.4	.25			0
11	.05	2.0	5.2	5.5	35	34	38	5.1	.33			0
12	0	2.0	5.2	5.5	22	31	34	4.7	.34			0
13	0	2.2	5.2	5.5	18	27	28	4.1	.36			0
14	0	2.4	5.5	5.8	15	25	26	3.6	.31			0
15	0	2.6	5.2	5.8	12	23	22	3.1	.26			0
16	0	2.8	5.5	5.8	10	22	20	2.7	.13			0
17	0	3.1	5.8	5.8	9.6	21	18	2.3	.10			0
18	0	3.3	5.8	5.5	8.8	19	18	2.4	.05			0
19	0	3.3	5.8	5.5	8.4	18	16	2.3	.02			0
20	0	3.8	5.8	5.2	7.7	16	16	2.1	0			0
21	0	4.2	5.8	5.0	7.3	16	14	1.9	0			0
22	0	4.2	5.8	5.0	6.7	15	14	1.9	0			0
23	0	4.4	5.5	5.0	6.4	15	13	1.9	0			0
24	0	4.7	5.5	4.7	6.1	14	13	1.7	0			0
25	0	4.7	5.5	4.7	6.1	13	11	1.7	0			0
26	0	5.0	5.5	4.7	5.8	13	10	1.6	0			0
27	0	5.0	5.5	4.7	5.8	12	9.9	1.4	0			0
28	0	4.4	5.8	4.7	5.5	11	9.5	1.3	0			0
29	0	4.2	5.5	4.7	9.2	11	9.5	1.0	0			1.0
30	.07	4.2	5.5	4.4	---	11	9.0	1.0	0			.20
31	1.8	---	5.2	4.4	---	11	---	.91	---			---
TOTAL	1.96	99.6	166.2	160.5	500.3	1597	502.7	117.91	6.19	0	0	1.20
MEAN	.063	3.32	5.36	5.18	17.3	51.5	16.8	3.80	.21	0	0	.040
MAX	1.8	5.0	5.8	5.8	152	312	38	8.6	.80	0	0	1.0
MIN	0	2.0	4.4	4.4	4.2	11	9.0	.91	0	0	0	0
AC-FT	3.9	198	330	318	992	3170	997	234	12	0	0	2.4
CAL YR 1975 TOTAL	87175.38											
WTR YR 1976 TOTAL	3153.56											
MEAN 239												
MEAN 8.62												
MAX 13600												
MAX 312												
MIN 0												
MIN 0												
AC-FT 172900												
AC-FT 6250												



SALINAS RIVER BASIN

11148900 NACIMIENTO RIVER BELOW SAPAQUE CREEK, NEAR BRYSON, CA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1972 to current year.

WATER TEMPERATURES: Water years 1972-74.

SEDIMENT RECORDS: Water years 1972 to current year.

Published as station 11148800 "near Bryson" in water years 1958-59, 1961-71.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: October 1971 to September 1974.

SEDIMENT RECORDS: October 1971 to September 1974.

SUSPENDED SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1975 TO SEPTEMBER 1976

DATE	TIME	TEMPER- ATURE (DEG C)	INSTAN- TANEOUS DIS- CHARGE (CFS)	SUS- PENDE SEDIM- ENT DIS- CHARGE (MG/L)	SUS- PENDE SEDIM- ENT DIS- CHARGE (T/DAY)
NOV					
07...	1245	14.5	2.4	10	.06
DEC					
01...	1500	7.0	4.7	5	.06
JAN					
19...	1515	7.5	5.8	1	.02
FEB					
02...	1445	9.5	5.0	16	.22
MAR					
09...	1305	13.0	42	7	.79
APR					
09...	1355	19.0	32	3	.26
MAY					
06...	1340	18.0	6.5	7	.12
JUN					
04...	1205	22.5	.54	4	.01

PARTICLE-SIZE DISTRIBUTION OF SURFACE BED MATERIAL, WATER YEAR OCTOBER 1975 TO SEPTEMBER 1976

DATE	TIME	TEMPER- ATURE (DEG C)	NUMBER OF SAM- PLING POINTS	INSTAN- TANEOUS DIS- CHARGE (CFS)	BED MAT. SIEVE DIAM. & FINER THAN .062 MM	BED MAT. SIEVE DIAM. & FINER THAN .125 MM	BED MAT. SIEVE DIAM. & FINER THAN .250 MM	BED MAT. SIEVE DIAM. & FINER THAN .500 MM
FEB								
02...	1525	9.5	1	5.0	--	1	6	37
02...	1530	9.5	1	5.0	--	2	9	27
02...	1535	9.5	1	5.0	4	16	60	93

DATE	BED MAT. SIEVE DIAM. & FINER THAN 1.00 MM	BED MAT. SIEVE DIAM. & FINER THAN 2.00 MM	BED MAT. SIEVE DIAM. & FINER THAN 4.00 MM	BED MAT. SIEVE DIAM. & FINER THAN 8.00 MM	BED MAT. SIEVE DIAM. & FINER THAN 16.0 MM	BED MAT. SIEVE DIAM. & FINER THAN 32.0 MM	BED MAT. SIEVE DIAM. & FINER THAN 64.0 MM
FEB							
02...	46	53	63	77	91	94	100
02...	45	70	83	88	91	97	100
02...	96	96	97	98	98	100	--

# SALINAS RIVER BASIN

## RESERVOIRS IN SALINAS RIVER BASIN, CA

11149300 NACIMIENTO RESERVOIR.--Lat 35°45'29", long 120°53'01", in NW¼ sec.15, T.25 S., R.10 E., San Luis Obispo County, at right end of dam on Nacimiento River, 8.6 mi (13.8 km) southwest of Bradley, and 12.3 mi (19.8 km) upstream from mouth. DRAINAGE AREA, 319 mi<sup>2</sup> (826 km<sup>2</sup>). PERIOD OF RECORD, February 1957 to current year. Monthend contents prior to October 1970, published in WSP 2129. GAGE, nonrecording gage read once daily. Datum of gage is at mean sea level (levels by Monterey County Flood Control and Water Conservation District).

Reservoir is formed by earthfill dam completed in 1957. Total capacity, 350,000 acre-ft (432 hm<sup>3</sup>); usable capacity, 340,000 acre-ft (419 hm<sup>3</sup>) between elevations 670.0 ft (204.22 m), outlet and 800.0 ft (243.84 m), crest of spillway. Dead storage, 10,000 acre-ft (12.3 hm<sup>3</sup>). Figures given herein represent total contents. Reservoir is used for flood control and water released down Nacimiento River for irrigation. Record of contents furnished by Monterey County Flood Control and Water Conservation District.

EXTREMES FOR PERIOD OF RECORD: Maximum contents observed, 374,500 acre-ft (462 hm<sup>3</sup>) Apr. 7, 1958, elevation, 804.7 ft (245.27 m); minimum observed since appreciable storage was attained, 10,910 acre-ft (13.5 hm<sup>3</sup>) Oct. 11, 1960, elevation, 670.8 ft (204.46 m).

EXTREMES FOR CURRENT YEAR: Maximum contents observed, 223,100 acre-ft (275 hm<sup>3</sup>) Oct. 1, elevation, 773.10 ft (235.641 m); minimum observed, 57,820 acre-ft (71.3 hm<sup>3</sup>) Sept. 30, elevation, 717.85 ft (218.801 m).

11150100 SAN ANTONIO RESERVOIR.--Lat 35°47'55", long 120°53'02", in SW¼ sec.34, T.24 S., R.10 E., Monterey County, at dam on San Antonio River, 0.7 mi (1.1 km) upstream from Sulphur Canyon, and 6.4 mi (10.3 km) southwest of Bradley. DRAINAGE AREA, 330 mi<sup>2</sup> (855 km<sup>2</sup>). PERIOD OF RECORD, December 1965 to current year. Monthend contents prior to October 1970, published in WSP 2129. GAGE, water-stage recorder. Datum of gage is at mean sea level (levels by Monterey County Flood Control and Water Conservation District).

Reservoir is formed by earthfill dam completed in 1965. Total capacity, 350,000 acre-ft (432 hm<sup>3</sup>); usable capacity, 330,000 acre-ft (407 hm<sup>3</sup>) between elevations 662.0 ft (201.78 m), minimum pool and 780.0 ft (237.74 m), crest of spillway. Dead storage, 20,000 acre-ft (24.7 hm<sup>3</sup>). Records given herein represent total contents. Reservoir is used for flood control and water released down San Antonio River for irrigation. Record of contents furnished by Monterey County Flood Control and Water Conservation District.

EXTREMES FOR PERIOD OF RECORD: Maximum contents, 348,900 acre-ft (430 hm<sup>3</sup>) May 27, 1969, elevation, 779.8 ft (237.68 m); minimum since appreciable storage was attained, 93,820 acre-ft (116 hm<sup>3</sup>) Nov. 5-13, 1972, elevation, 714.1 ft (217.66 m).

EXTREMES FOR CURRENT YEAR: Maximum contents, 300,000 acre-ft (370 hm<sup>3</sup>) Oct. 1, elevation, 771.00 ft (235.001 m); minimum, 242,400 acre-ft (299 hm<sup>3</sup>) Sept. 27, 28, elevation, 759.35 ft (231.450 m).

## MONTHEND CONTENTS, IN ACRE-FEET, AT 2400, OCTOBER 1975 TO SEPTEMBER 1976

Date	Nacimiento Reservoir	San Antonio Reservoir
Sept. 30, 1975.	223900	300000
Oct. 31.....	212300	296600
Nov. 30.....	204400	293900
Dec. 31.....	199800	292600
Jan. 31, 1976..	194300	291300
Feb. 29.....	189100	292300
Mar. 31.....	186300	292300
Apr. 30.....	180200	278800
May 31.....	163200	268000
June 30.....	140800	259100
July 31.....	109400	250200
Aug. 31.....	81680	245500
Sept. 30.....	57820	242600

# SALINAS RIVER BASIN

11149400 NACIMIENTO RIVER BELOW NACIMIENTO DAM, NEAR BRADLEY, CA

LOCATION.--Lat 35°45'41", long 120°51'16", in NE¼NE¼ sec.14, T.2S S., R.10 E., San Luis Obispo County, Camp Roberts Military Reservation, on left bank 2.2 mi (3.5 km) downstream from Nacimiento Dam, and 7.6 mi (12.2 km) southwest of Bradley.

DRAINAGE AREA.--322 mi<sup>2</sup> (834 km<sup>2</sup>).

PERIOD OF RECORD.--October 1957 to current year.

GAGE.--Water-stage recorder. Datum of gage is 597 ft (182 m) above mean sea level (Corps of Engineers bench mark).

REMARKS.--Records good. Flow regulated by Nacimiento Dam (station 11149300), 2.2 mi (3.5 km) upstream. No diversion above station.

AVERAGE DISCHARGE (unadjusted).--19 years, 275 ft<sup>3</sup>/s (7.788 m<sup>3</sup>/s), 199,200 acre-ft/yr (246 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,340 ft<sup>3</sup>/s (208 m<sup>3</sup>/s) Feb. 25, 1969, gage height, 10.92 ft (3.328 m); no flow for many days in each year except 1964, 1966-76.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 600 ft<sup>3</sup>/s (17.0 m<sup>3</sup>/s) July 13, gage height, 4.68 ft (1.426 m); minimum daily, 3.8 ft<sup>3</sup>/s (0.11 m<sup>3</sup>/s) Dec. 21.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1975 TO SEPTEMBER 1976 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	465	131	129	21	171	22	340	156	330	407	568	440
2	465	131	131	21	171	23	324	154	329	406	564	440
3	465	131	131	21	171	22	322	153	329	405	564	444
4	392	131	131	21	171	22	320	152	329	406	559	444
5	152	131	131	21	215	22	187	152	329	405	559	444
6	149	131	131	21	261	22	70	152	330	403	559	448
7	149	131	131	21	261	22	72	151	330	402	555	448
8	147	131	131	21	261	22	73	229	329	404	555	448
9	147	131	131	20	227	22	75	282	330	400	551	448
10	147	134	131	21	168	46	76	281	329	400	546	453
11	147	134	131	21	165	124	78	280	328	400	546	448
12	147	131	131	21	165	127	87	278	328	400	542	436
13	147	134	131	21	165	127	97	277	328	491	537	436
14	147	134	131	21	165	127	97	275	328	582	537	436
15	147	131	131	21	165	127	98	273	328	582	537	436
16	147	134	131	21	165	127	98	271	328	582	533	440
17	147	134	131	21	165	127	99	270	328	577	499	440
18	144	134	79	21	165	139	99	307	328	577	444	440
19	144	134	5.5	66	162	160	100	340	326	577	444	436
20	144	134	4.1	165	149	160	100	338	327	577	440	436
21	141	134	3.8	165	149	160	100	338	327	573	440	432
22	141	131	12	165	149	160	99	337	327	577	440	432
23	139	131	20	165	149	194	97	336	371	577	440	416
24	139	134	21	162	84	233	95	337	414	573	440	388
25	139	131	21	162	23	233	94	334	412	573	440	384
26	139	131	21	214	22	230	92	332	412	573	436	384
27	139	131	21	333	22	230	92	332	411	573	440	384
28	136	131	21	333	22	227	91	332	411	573	440	358
29	134	131	21	329	23	224	121	332	409	568	440	333
30	134	131	21	283	---	301	157	331	407	568	440	312
31	131	---	21	171	---	355	---	331	---	568	444	---
TOTAL	5651	3963	2517.4	3090	4351	4137	3850	8634	10472	15679	15479	12664
MEAN	182	132	81.2	99.7	150	133	128	272	349	506	499	422
MAX	465	134	131	333	261	355	340	340	414	582	568	453
MIN	131	131	3.8	20	22	22	70	151	326	400	436	312
AC-FT	11210	7860	4990	6130	8630	8210	7640	16730	20770	31100	30700	25120
CAL YR 1975 TOTAL	189281.4 MEAN 299 MAX 4170 MIN 3.8 AC-FT 216000											
WTR YR 1976 TOTAL	90287.4 MEAN 247 MAX 582 MIN 3.8 AC-FT 179100											

# SALINAS RIVER BASIN

11149900 SAN ANTONIO RIVER NEAR LOCKWOOD, CA

LOCATION.--Lat 35°53'48", long 121°05'14", in Los Ojitos Grant, Monterey County, on downstream side of highway bridge, 0.4 mi (0.6 km) upstream from Tule Canyon, and 3.3 mi (5.3 km) south of Lockwood.

DRAINAGE AREA.--223 mi<sup>2</sup> (578 km<sup>2</sup>).

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1965 to current year.

GAGE.--Water-stage recorder. Datum of gage is 800.00 ft (243.840 m) above mean sea level.

REMARKS.--Records good. No regulation; some pumping above station.

AVERAGE DISCHARGE.--11 years, 95.2 ft<sup>3</sup>/s (2.696 m<sup>3</sup>/s), 68,970 acre-ft/yr (85.0 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,000 ft<sup>3</sup>/s (396 m<sup>3</sup>/s) Jan. 26, 1969, gage height, 8.25 ft (2.515 m); maximum gage height, 9.2 ft (2.80 m), from floodmarks, Dec. 6, 1966; no flow for several months in each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 78 ft<sup>3</sup>/s (2.21 m<sup>3</sup>/s) Mar. 1, gage height, 5.48 ft (1.670 m), no peak above base of 1,500 ft<sup>3</sup>/s (42 m<sup>3</sup>/s); no flow for several months.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1975 TO SEPTEMBER 1976 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1			0	4.6	5.4	54	6.7	3.1				
2			0	5.1	5.4	54	6.7	2.7				
3			0	4.5	4.5	51	7.4	2.1				
4			0	3.7	4.9	45	7.4	1.8				
5			0	3.9	5.4	37	6.7	1.8				
6			0	3.9	6.7	32	6.7	2.1				
7			0	3.9	6.7	28	6.7	1.8				
8			0	4.0	15	26	9.9	1.6				
9			.02	4.2	33	23	12	1.4				
10			.60	4.2	43	23	17	1.1				
11			.98	3.9	32	21	17	.77				
12			1.5	4.1	27	19	19	.47				
13			1.4	4.1	23	18	18	.22				
14			1.2	3.9	21	18	15	.04				
15			1.3	4.0	19	15	13	0				
16			1.5	4.2	18	14	12	0				
17			1.7	4.2	15	13	9.9	0				
18			1.9	4.4	14	13	9.0	0				
19			2.1	4.4	12	11	8.2	0				
20			2.1	3.9	13	9.9	8.2	0				
21			2.6	3.9	13	9.0	7.4	0				
22			2.6	4.4	9.9	9.0	6.7	0				
23			2.6	4.4	9.0	7.4	6.7	0				
24			2.6	4.4	9.0	7.4	6.0	0				
25			2.7	3.9	8.2	7.4	5.4	0				
26			2.7	3.9	8.2	7.4	4.9	0				
27			2.7	3.9	7.4	6.7	4.9	0				
28			3.0	4.4	8.2	7.4	4.4	0				
29			3.3	4.9	9.0	7.4	3.9	0				
30			3.5	4.4	---	7.4	3.5	0				
31		---	4.2	4.9	---	6.7	---	0	---			---
TOTAL	0	0	48.80	130.5	406.3	608.1	270.3	21.00	0	0	0	0
MEAN	0	0	1.57	4.21	14.0	19.6	9.01	.68	0	0	0	0
MAX	0	0	4.2	5.1	43	54	19	3.1	0	0	0	0
MIN	0	0	0	3.7	4.9	6.7	3.5	0	0	0	0	0
AC-FT	0	0	97	259	806	1210	536	42	0	0	0	0
CAL YR 1975	TOTAL	40143.83	MEAN	110	MAX	2940	MIN	0	AC-FT	79630		
WTR YR 1976	TOTAL	1485.00	MEAN	4.06	MAX	54	MIN	0	AC-FT	2950		

NOTE.--No gage-height record Dec. 1 to Jan. 19.



SALINAS RIVER BASIN  
11149900 SAN ANTONIO RIVER NEAR LOCKWOOD, CA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD:--Water years 1966 to current year.  
WATER TEMPERATURES: Water years 1966-73.  
SEDIMENT RECORDS: Water years 1966 to current year.  
PERIOD OF DAILY RECORD:--  
WATER TEMPERATURES: October 1965 to September 1973.  
SEDIMENT RECORDS: October 1965 to September 1974.

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1975 TO SEPTEMBER 1976

DATE	TIME	TEMPER- ATURE (DEG C)	INSTAN- TANEOUS DIS- CHARGE (CFS)	SUS- PENDED SEDIM- ENT CHARGE (MG/L)	SUS- PENDED SEDIM- ENT CHARGE (T/DAY)	SUS. SED. SIEVE DIAM. % FINER THAN .062 MM	SUS. SED. SIEVE DIAM. % FINER THAN .125 MM	SUS. SED. SIEVE DIAM. % FINER THAN .250 MM	SUS. SED. SIEVE DIAM. % FINER THAN .500 MM	SUS. SED. SIEVE DIAM. % FINER THAN 1.00 MM
JAN 19...	1245	15.5	4.9	3	.04	--	--	--	--	--
FEB 02...	1240	17.0	5.4	10	.15	--	--	--	--	--
MAR 01...	1230	13.0	74	195	39	65	71	85	97	100
MAR 12...	1150	19.5	9	4	.21	--	--	--	--	--
APR 09...	1215	19.0	13	4	.14	--	--	--	--	--
MAY 06...	1105	17.5	2.4	3	.02	--	--	--	--	--

PARTICLE-SIZE DISTRIBUTION OF SURFACE BED MATERIAL, WATER YEAR OCTOBER 1975 TO SEPTEMBER 1976

DATE	TIME	NUMBER OF SAM- PLING POINTS	INSTAN- TANEOUS DIS- CHARGE (CFS)	BED MAT. SIEVE DIAM. % FINER THAN .062 MM	BED MAT. SIEVE DIAM. % FINER THAN .125 MM	BED MAT. SIEVE DIAM. % FINER THAN .250 MM	BED MAT. SIEVE DIAM. % FINER THAN .500 MM
FEB 02...	1250	1	5.4	--	--	2	15
FEB 02...	1255	1	5.4	--	1	2	6
FEB 02...	1300	1	5.4	1	2	11	32
FEB 02...	1305	1	5.4	1	3	11	23
FEB 02...	1310	1	5.4	14	30	71	77

DATE	NUMBER OF SAM- PLING POINTS	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM	BED MAT. SIEVE DIAM. % FINER THAN 64.0 MM
FEB 02...	52	82	95	99	100	--	--	--
FEB 02...	25	46	60	70	81	91	100	--
FEB 02...	53	71	84	93	99	100	--	--
FEB 02...	34	48	65	78	87	95	100	--
FEB 02...	83	88	90	93	97	98	100	--

PARTICLE-SIZE DISTRIBUTION OF SEDIMENT IN TRANSIT WITHIN 0.25 FOOT OF BED SURFACE,  
WATER YEAR OCTOBER 1975 TO SEPTEMBER 1976

DATE	TIME	TEMPER- ATURE (DEG C)	NUMBER OF SAM- PLING POINTS	INSTAN- TANEOUS DIS- CHARGE (CFS)	STREAM WIDTH (FT)	SEDIM- ENT BEDLOAD DIS- CHARGE (T/DAY)	SED. BEDLOAD SIEVE DIAM. % FINER THAN .125 MM	SED. BEDLOAD SIEVE DIAM. % FINER THAN .250 MM
MAR 12...	1230	19.5	16	19	50	25	--	1
APR 09...	1209	19.0	12	13	26	14	1	1
MAY 06...	1115	17.5	9	2.4	9.4	1.4	--	--

DATE	SED. BEDLOAD SIEVE DIAM. % FINER THAN .500 MM	SED. BEDLOAD SIEVE DIAM. % FINER THAN 1.00 MM	SED. BEDLOAD SIEVE DIAM. % FINER THAN 2.00 MM	SED. BEDLOAD SIEVE DIAM. % FINER THAN 4.00 MM	SED. BEDLOAD SIEVE DIAM. % FINER THAN 8.00 MM	SED. BEDLOAD SIEVE DIAM. % FINER THAN 16.0 MM	SED. BEDLOAD SIEVE DIAM. % FINER THAN 32.0 MM
MAR 12...	16	60	88	97	99	100	--
APR 09...	14	60	90	97	98	99	100
MAY 06...	12	76	99	100	--	--	--

## WATER RESOURCES DATA FOR CALIFORNIA, 1976

### COOPERATION

The U.S. Geological Survey and organizations of the State of California have had cooperative agreements for the systematic collection of records since 1903. Organizations that supplied data are acknowledged in station descriptions. Organizations that assisted in collecting data through cooperative agreement with the Survey are:

California Department of Water Resources, R. B. Robie, director.  
Alameda County Flood Control and Water Conservation District,  
P. E. Lanferman, engineer-manager.  
Alameda County Water District, M. P. Whitfield, general manager-chief engineer.  
Contra Costa County Flood Control and Water Conservation District,  
J. E. Taylor, deputy chief engineer.  
Marin County Department of Public Works, Ray W. Foreaker, Jr., director.  
Marin Municipal Water District, J. Dietrich Stroeh, general manager.  
Monterey County Flood Control and Water Conservation District, Loran Bunte, Jr., district engineer.  
Napa County Flood Control and Water Conservation District, Gene Norriss, chairman.  
North Marin County Water District, John Olaf Nelson, manager.  
San Benito County Water Conservation and Flood Control District, Ralph G. Towle, district secretary.  
San Francisco, City and County Water Department, K. R. Boyd, general manager.  
San Luis Obispo County Engineering Department, G. C. Protopapas, county engineer.  
San Mateo County Department of Public Works, S. H. Cantwell, Jr., director.  
San Rafael, City of, Department of Public Works, Ely Caillouette, Jr., director.  
Santa Clara Valley Water District, J. T. O'Halloran, general manager.  
Santa Cruz County Flood Control and Water Conservation District, D. A. Porath, district engineer.

Assistance in the form of funds or services was given by the Corps of Engineers, U.S. Army; Bureau of Reclamation, Bureau of Land Management, and National Park Service, U.S. Department of the Interior; Forest Service, U.S. Department of Agriculture.

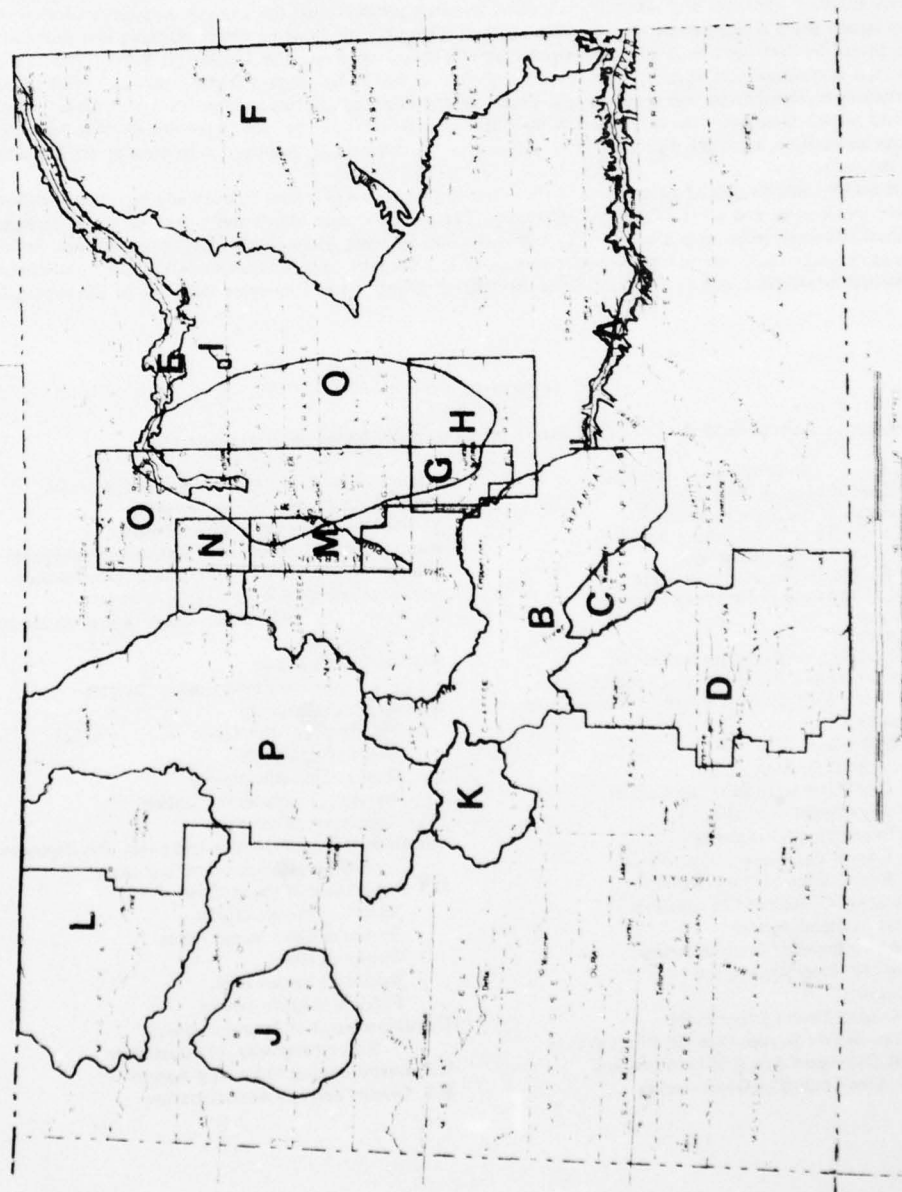
The following organizations aided in collecting records: Pacific Power and Light Co., Pacific Gas and Electric Co., and East Bay Municipal Utility District.

## APPENDIX E:

### SECTIONS OF THE WATER RESOURCES INVESTIGATIONS IN COLORADO, 1977 PUBLICATION

Colorado has been used as an example because its publication has been recently updated and its format is similar to that of many other districts. This appendix includes a map (Figure E1), which summarizes surface and groundwater sampling stations in Colorado, and outlines some of the current study areas. Also included is a list of cooperating agencies, which may be able to provide further information. Complete copies of the Investigation Reports can be obtained from District offices listed in Appendix A.

# HYDROLOGIC DATA STATIONS AND INVESTIGATIONS IN PROGRESS IN COLORADO, AS OF JANUARY 1977



COUNTY	HYDROLOGIC DATA STATIONS					SURFACE WATER			GROUNDWATER		
	Con. Sta.	Flow Sta.	Water Sta.	Water Sta.	Water Sta.	Con. Sta.	Flow Sta.	Water Sta.	Con. Sta.	Flow Sta.	Water Sta.
Adams	1	1	1	1	1	1	1	1	1	1	1
Alamosa	1	1	1	1	1	1	1	1	1	1	1
Archuleta	1	1	1	1	1	1	1	1	1	1	1
Baca	1	1	1	1	1	1	1	1	1	1	1
Bent	1	1	1	1	1	1	1	1	1	1	1
Boulder	1	1	1	1	1	1	1	1	1	1	1
Chaffee	1	1	1	1	1	1	1	1	1	1	1
Cherokee	1	1	1	1	1	1	1	1	1	1	1
Conejos	1	1	1	1	1	1	1	1	1	1	1
Costilla	1	1	1	1	1	1	1	1	1	1	1
Crowley	1	1	1	1	1	1	1	1	1	1	1
Custer	1	1	1	1	1	1	1	1	1	1	1
Dalla	1	1	1	1	1	1	1	1	1	1	1
Denver	1	1	1	1	1	1	1	1	1	1	1
Douglas	1	1	1	1	1	1	1	1	1	1	1
El Paso	1	1	1	1	1	1	1	1	1	1	1
Espe	1	1	1	1	1	1	1	1	1	1	1
Garfield	1	1	1	1	1	1	1	1	1	1	1
Grand	1	1	1	1	1	1	1	1	1	1	1
Gunnison	1	1	1	1	1	1	1	1	1	1	1
Huerfano	1	1	1	1	1	1	1	1	1	1	1
Hutchinson	1	1	1	1	1	1	1	1	1	1	1
Jefferson	1	1	1	1	1	1	1	1	1	1	1
Kiowa	1	1	1	1	1	1	1	1	1	1	1
Krit Carson	1	1	1	1	1	1	1	1	1	1	1
Lake	1	1	1	1	1	1	1	1	1	1	1
La Plata	1	1	1	1	1	1	1	1	1	1	1
Larimer	1	1	1	1	1	1	1	1	1	1	1
Las Animas	1	1	1	1	1	1	1	1	1	1	1
Lincoln	1	1	1	1	1	1	1	1	1	1	1
Logan	1	1	1	1	1	1	1	1	1	1	1
Mesa	1	1	1	1	1	1	1	1	1	1	1
Mineral	1	1	1	1	1	1	1	1	1	1	1
Monte Vista	1	1	1	1	1	1	1	1	1	1	1
Montezuma	1	1	1	1	1	1	1	1	1	1	1
Morgan	1	1	1	1	1	1	1	1	1	1	1
Otero	1	1	1	1	1	1	1	1	1	1	1
Ouray	1	1	1	1	1	1	1	1	1	1	1
Park	1	1	1	1	1	1	1	1	1	1	1
Pitkin	1	1	1	1	1	1	1	1	1	1	1
Prowers	1	1	1	1	1	1	1	1	1	1	1
Pueblo	1	1	1	1	1	1	1	1	1	1	1
Rio Blanco	1	1	1	1	1	1	1	1	1	1	1
Rio Grande	1	1	1	1	1	1	1	1	1	1	1
Saguache	1	1	1	1	1	1	1	1	1	1	1
San Juan	1	1	1	1	1	1	1	1	1	1	1
San Miguel	1	1	1	1	1	1	1	1	1	1	1
Sedgewick	1	1	1	1	1	1	1	1	1	1	1
Summit	1	1	1	1	1	1	1	1	1	1	1
Teller	1	1	1	1	1	1	1	1	1	1	1
Washington	1	1	1	1	1	1	1	1	1	1	1
Yuma	1	1	1	1	1	1	1	1	1	1	1
TOTAL	4,24	14	23	107	4,218						

A INVESTIGATIONS IN PROGRESS - NEW STA.

Figure E1. Colorado surface and groundwater sampling stations.



## WATER-RESOURCES INVESTIGATIONS IN COLORADO, 1977

### INTRODUCTION

The U.S. Geological Survey, through its Water Resources Division, investigates the occurrence, quantity, quality, distribution, and movement of the surface and underground water that compose the Nation's water resources. The U.S. Geological Survey is the principal Federal water-data agency and, as such, collects and disseminates about 70 percent of the water data currently being used by numerous State, local, private, and other Federal agencies to develop and manage our water resources. This nationwide program, which is carried out through the Water Resources Division's 46 District (State) offices and 4 Regional offices, consists of the collection of basic hydrologic data, areal resource appraisal and interpretive studies, research projects, and the analysis and dissemination of the data and results of its investigations. Much of the work is a cooperative effort in which planning and financial support are shared by State and local governments and other Federal agencies. The Geological Survey also is responsible for the coordination of specific water-data acquisition activities by other Federal agencies. Information on these activities is consolidated into a central file known as the "Catalog of Information on Water Data," which is maintained by the Geological Survey. Many State and local agencies and private organizations that have related water-data acquisition activities also contribute information to this catalog. Indexes to the catalog are published at selected intervals.

This folder contains a brief description of the water-resources investigations in Colorado in which the Geological Survey participates and a list of selected references. The principal map shows the extent of the hydrologic investigations; the small maps give a broad picture of variations in some of the hydrologic characteristics pertaining to Colorado's water resources and also show coverage of the State by certain types of information. Additional or more detailed information can be obtained from the District Chief, Water Resources Division, in Lakewood, Colo.

### COOPERATORS

In Colorado, various parts of the Geological Survey program are conducted in cooperation with:

Colorado Department of Natural Resources: Division of Water Resources, Office of the State Engineer Colorado Water Conservation Board Colorado Geological Survey Arkansas River Compact Administration Boulder City and County Health Department City of Aspen City of Aurora City of Colorado Springs, Office of the City Manager and Department of Public Utilities City and County of Denver, Board of Water Commis- sioners City of Fort Collins City of Glenwood Springs Colorado City Water and Sanitation District Colorado Department of Health Colorado Department of Highways Colorado River Water Conservation District Colorado West Council of Governments Denver Regional Council of Governments Eagle County Commissioners El Paso County Board of Commissioners El Paso County Water Association Jackson County Jefferson County Health Department Metropolitan Denver Sewage Disposal District No. 1 North West Colorado Council of Governments Pikes Peak Area Council of Governments	Pitkin County Board of County Commissioners Pueblo Area Council of Governments Rio Grande Water Conservation District Routt County Department of Environmental Health Southeastern Colorado Water Conservancy District Southwestern Water Conservation District St. Vrain and Left Hand Creek Water Conservancy District University of Colorado Urban Drainage and Flood Control District U.S. Air Force Academy U.S. Department of the Army: Corps of Engineers Rocky Mountain Arsenal Waterways Experiment Station U.S. Department of the Navy U.S. Department of Housing and Urban Development, Federal Insurance Administration U.S. Department of the Interior: Bureau of Indian Affairs Bureau of Land Management Bureau of Mines Bureau of Reclamation Fish and Wildlife Service U.S. Department of Transportation, Federal Highway Administration U.S. Environmental Protection Agency U.S. General Services Administration
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APPENDIX F:

LIST OF AEHA PUBLISHED REPORTS FROM  
FY70 TO FEBRUARY 1978 FOR SELECTED INSTALLATIONS

This appendix provides a breakdown of AEHA published reports by category for selected installations for the time between FY70 and February 1978. In addition, the appendix provides an example of the output from the AEHA Drinking Water Quality Data Base, which lists the statistical minimum, mean, maximum, and/the recommended limit for each parameter.

Installation	Water Quality Evaluations	Wastewater Treatment	Aquatic Biology	Geohydrologic	EIS/EIA	Other	Total
Benning	X					X	2
Bragg	XX				XX	X	5
Bliss					X	X	2
Campbell	X		X	X			3
Carson						X	1
Dix			X	XX	X		4
Drum						XX	2
Gordon	XX						2
Hood	X	X	X		X		4
Hunter-Liggett	X	X					4
Jefferson P.G.	X	X					2
Knox	X	X					2
Lewis							0
McClellan	X				X		2
Ord		XX					2
Polk		X	X			X	3
Riley						X	1
Rucker					X		1
Sill					X		1
Stewart	X			XX			3
Yakima							0
	12	7	4	5	8	8	44

# Army Environmental Hygiene Agency

## Water Reports\*

from FY70 to 9 Feb 78

INST/LOCN	ST	DATES		DOCHNT CTL#	SURVEY TITLE
		START	COMPL		
MCLELLAN FORT ANNISTON	AL	76 4	77 2	24-0066-77	Water Quality Biological Study
		77 2	77 3	24-1422-77	Environmental Impact Statement
RUCKER FORT DALEVILLE	AL	77 1	77 4	24-1430-77	Environmental Impact Statement
HUNTER LIGGETT MIL R JOLON	CA	75 2	76 2	24-033-75/76	Wastewater Monitoring
		74 4	76 2	24-0037-77	Water Quality San Antonio River
ORD FORT MONTEREY	CA	75 4	76 1	24-048-75	Wastewater Monitoring Land Disposal Sites
		75 2	76 2	24-033-75/76	Wastewater Monitoring
CARSON FORT COLORADO SPGS	CO	75 2	75 3	24-028-75	Contaminated Water Source

\* This list was excerpted from a computer printout (14 Feb 78) provided by Donald K. Emig, Chief, Water Consultation Branch, Water Quality Engineering Division, AEIA. During the period FY70 to 9 Feb 78, AEIA was involved in water investigations on most U.S. Army installations. However, the above list includes only those reports during this period that pertain to the installations selected for this study. (i.e., Benning, Bragg, Bliss, Campbell, Carson, Dix, Drum, Gordon, Hood, Hunter-Liggett, Jefferson Proving Ground, Knox, Lewis, McClellan, Ord, Polk, Riley, Rucker, Sill, Steward, Yakima).



NAWDEX FINAL MWDI

DATA ELEMENTS LIST

This list explains the coding used on the USGS station Header File.  
A complete copy can be obtained from any USGS Division or District office.

from FY70 to 9 Feb 78

INST/LOCN	ST	DATES		DOCMT CTL#	SURVEY TITLE
		START	COMPL		
BENNING FORT COLUMBUS	GA	74 2 74 2 75 2 76 4		24-034-74 24-029-75/76	Iodine Blister Pack Suitability Water Quality Engineering Special Study
GORDON FORT GROVETOWN	GA	76 1 76 4 77 2 77 4		24-059-75/76 24-0021-77	Water Quality Engineering Special Study Water Quality Engineering Consultation
HUNTER AAF STEWART FORT HINESVILLE	GA GA	76 1 76 5 76 5 77 2		24-021-76 24-0496-77	Geohydrologic Consultation Water Quality Engineering Special Study
JEFFERSON PROV GRND MADISON	IN	71 4 72 2 74 1 74 2		24-026-71/72 24-001-74	Water Quality Engineering Survey Wastewater Monitoring Consultation
RILEY FORT JUNCTION CITY	KS	76 4 76 5		24-012-76	Laboratory Consultation
CAMPBELL FORT CLARKSVILLE TN	KY	75 2 76 2 75 4 76 4 75 7 75 7		24-027-75/76 24-043-75/76 24-031-75/76	Aquatic Biological Study Water Geohydrologic Consultation Water Quality Stream Assimilation
KNOX FORT KNOX FORT	KY	70 2 70 3 75 3 76 5		24-020-70 24-044-75/76	Special Study - Waste Treatment Plant Water Quality Engineering Special Study
POLK FORT LEESVILLE	LA	75 1 76 1 75 4 76 1 75 4 76 5		24-021-75/76 24-053-75/76 24-058-75/76	Aquatic Biological Study Monitoring & Laboratory Consult Land Disposal Feasibility Study
DIX FORT WRIGHTSTOWN	NJ	74 3 74 3 76 1 76 4 76 1 77 3 77 1 77 3		24-046-74 24-005-76 24-0046-77 24-1421-77	Geohydrologic Consultation Water Quality Geohydrologic Consultation Water Quality Biological Study EIS For Ongoing Activities
DRUM CAMP GREAT BEND	NY	70 2 70 3 77 4 77 4		24-018-70 24-0063-77	Special Study - Remington Pond Routine Bacteriological Monitoring
BRAGG FORT FAYETTEVILLE	NC	76 2 76 3 76 5 77 2 77 1 77 3 77 1 77 3 77 1 77 3		24-019-76 24-0596-77 24-0011-77 24-1436-77 24-1436-77	Bacteria In Water System Water Quality Monitoring Consultation Water Quality Engineering Consultation Environmental Impact Statement Environmental Impact Statement

from FY70 to 9 Feb 78

<u>INST/LOCN</u>	<u>SI</u>	<u>DATES</u>		<u>DOCMT CTL#</u>	<u>SURVEY TITLE</u>
		<u>START</u>	<u>COMPL</u>		
SILL FORT LAWTON	OK	76 2	76 5	24-018-76	Environmental Assessment
AIR DEFENSE CENTER BLISS FORT	TX	77 3	77 4	24-0041-77	Potable Water Distribution System
BLISS FORT EL PASO	TX	77 1	77 3	24-1424-77	Environmental Impact Statement
HOOD FORT KILLEEN	TX	74 3 75 4 76 5 77 1	74 4 75 4 77 3 77 3	24-070-74 24-022-75 24-0426-77 24-1435-77	Water Quality Evaluation EIS Aquatic Biological Study Land Treatment Feasibility Environmental Impact Statement

Example Page:  
U.S. Army Drinking Water Quality Data Base.

70A003 AKIZUKI, JAPAN

SOURCE RS01

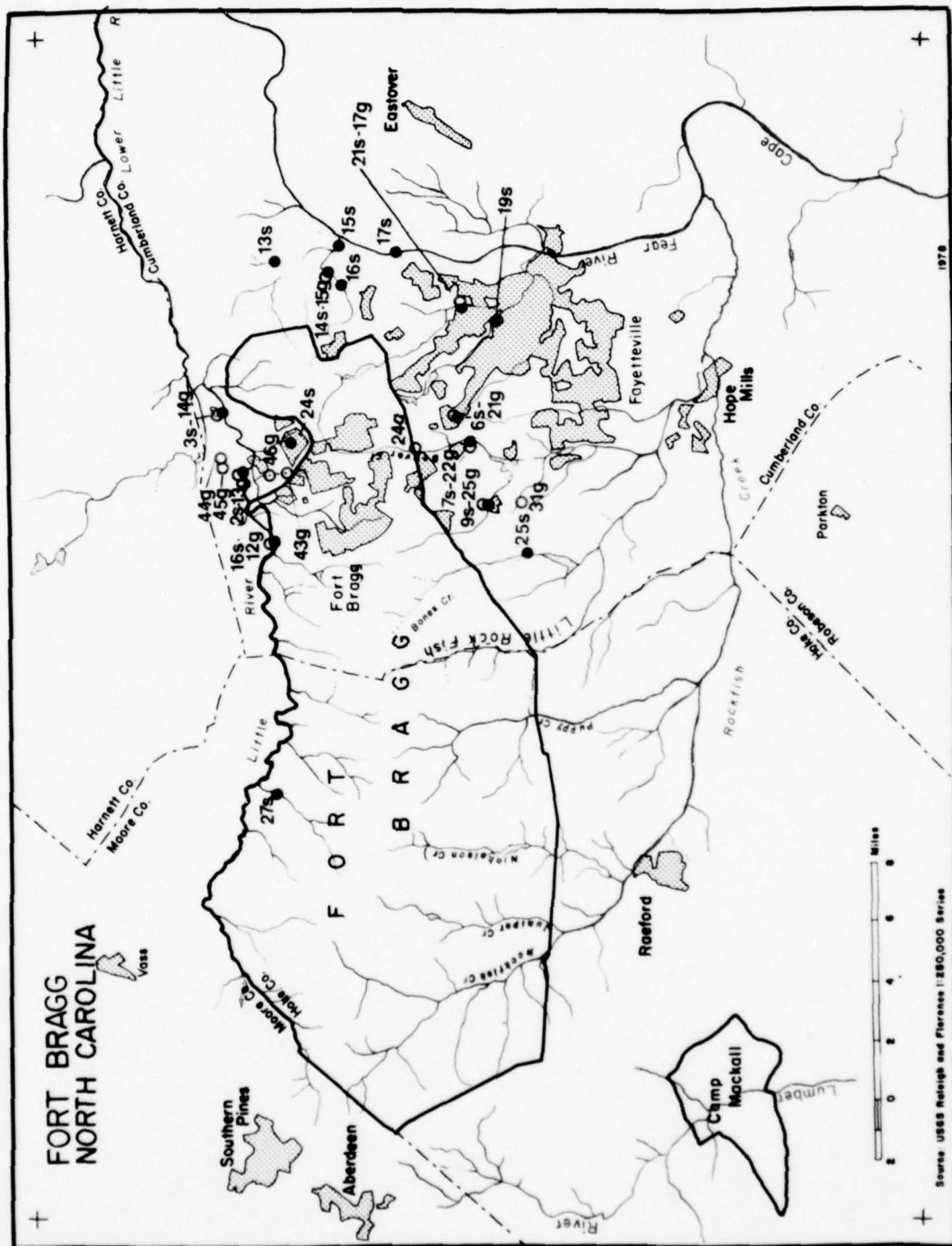
	AS	BA	CD	CR	F	PB	HG	NO3	SE	AG	NA
MIN	.002	< .30	< .005	< .025	.2	< .005	< .0002	2.7	.000	< .025	14.0
MEAN	.002	.30	.005	.025	.2	.005	.0002	3.1	.000	.025	14.5
MAX	.002	< .30	< .005	< .025	.2	< .005	< .0002	3.5	.000	< .025	15.1
NR OBS	1	2	2	2	2	1	2	2	0	2	2
	ALPHA	BETA	TRITIUM	90SR	22GRA	B	CU	FE	MG	MN	ZN
MIN	.7	1.5	.0006	.00	.00	.00	< .025	< .50	1.8	< .03	< .015
MEAN	1.4	1.6	.0503	.00	.00	.04	.025	.50	1.8	.03	.015
MAX	2.0	1.7	.1000	.00	****	.08	< .025	< .50	1.8	< .03	< .015
NR OBS	2	2	2	0	0	2	2	2	1	2	2
	COLOR	ALK	PH	HARD	SP C	CA	K	SI	TDS	CL	S04
MIN	5.	10.0	6.6	30.0	185.	16.9	1.21	.10	999.0	12.0	19.0
MEAN	5.	18.4	6.7	41.0	185.	21.4	1.50	.10	.0	12.0	21.0
MAX	5.	26.8	6.9	52.0	185.	25.9	1.78	.10	.0	12.0	23.0
NR OBS	2	2	2	2	1	2	2	1	0	2	2

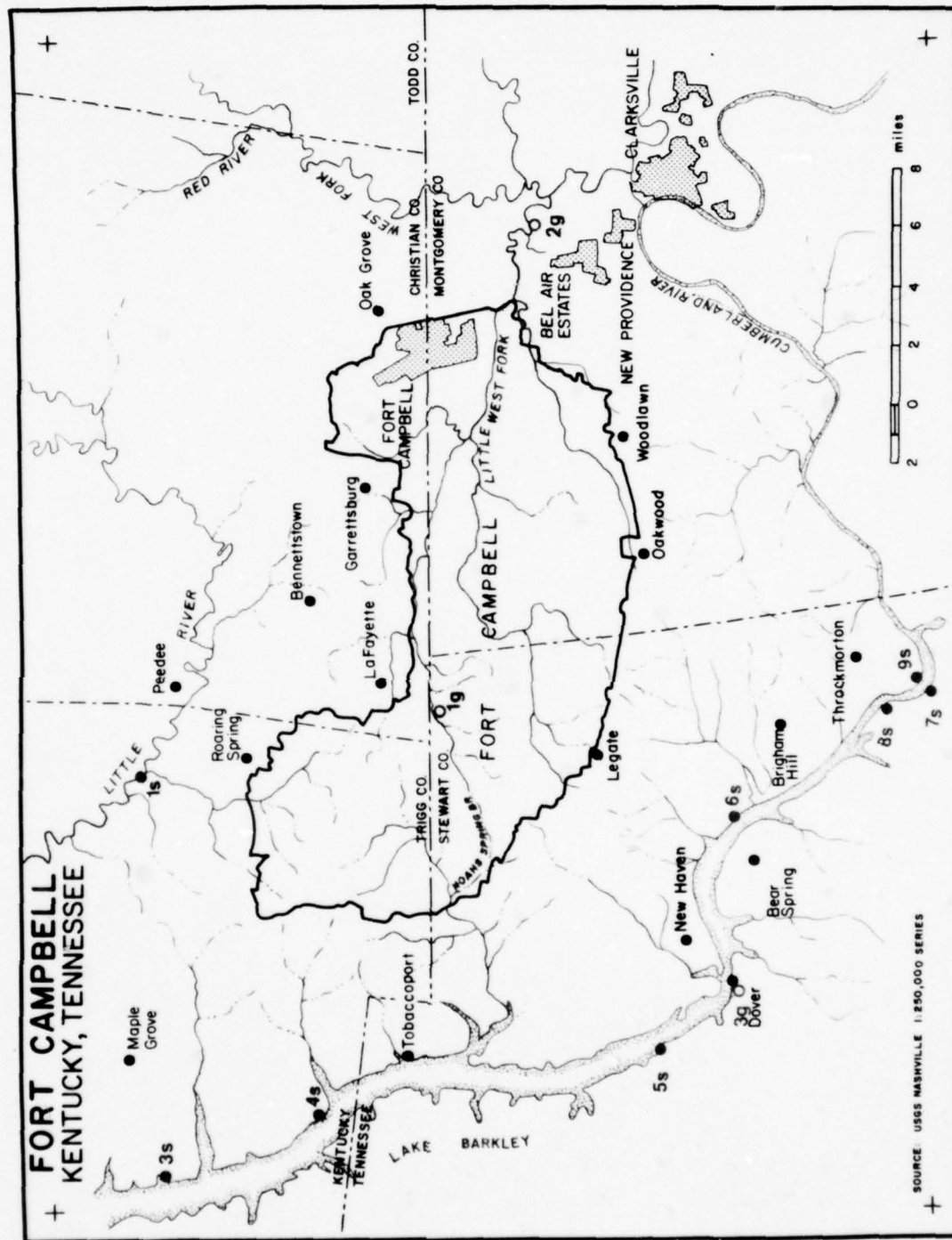
SOURCE RS02

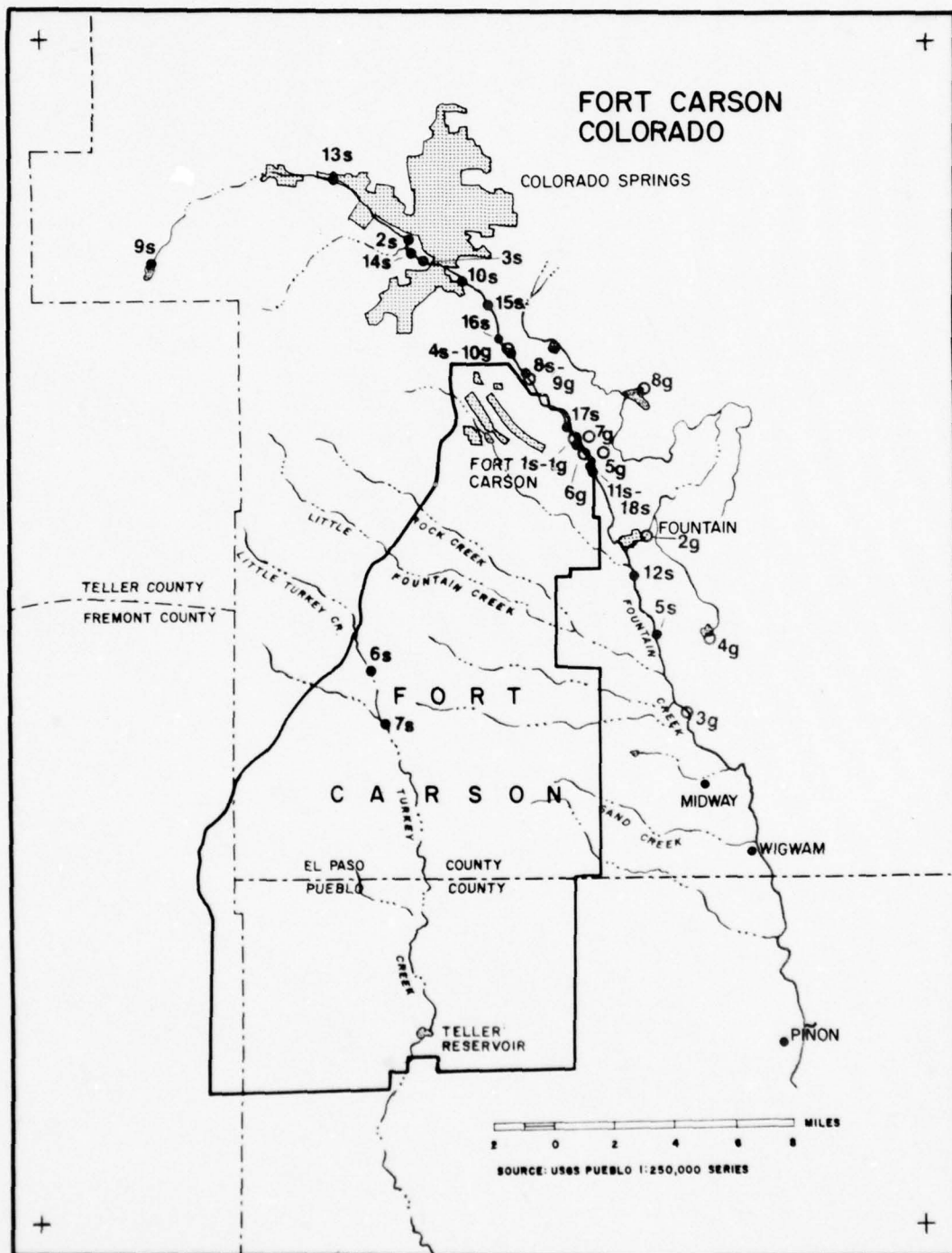
	AS	BA	CD	CR	F	PB	HG	NO3	SE	AG	NA
MIN	.006	< .30	< .005	< .025	.1	< .005	< .0002	4.1	.000	< .025	8.2
MEAN	.006	.30	.005	.025	.1	.005	.0002	4.3	.000	.025	13.5
MAX	.006	< .30	< .005	< .025	.2	< .005	.0003	4.4	.000	< .025	16.2
NR OBS	1	3	3	3	3	3	3	3	0	3	3
	ALPHA	BETA	TRITIUM	90SR	22GRA	B	CU	FE	MG	MN	ZN
MIN	.4	.9	.0006	.00	.00	.00	< .025	< .50	1.5	< .03	< .015
MEAN	.7	1.6	.0338	.00	.00	.04	.025	.50	14.7	.03	.105
MAX	1.1	2.1	.1000	.00	****	.10	< .025	< .50	27.9	< .03	.284
NR OBS	3	3	3	0	0	3	3	3	2	3	3
	COLOR	ALK	PH	HARD	SP C	CA	K	SI	TDS	CL	S04
MIN	5.	5.0	6.6	30.0	180.	17.7	1.09	.13	176.0	16.0	17.0
MEAN	5.	15.4	6.7	41.8	190.	40.7	1.60	.13	178.0	17.0	19.9
MAX	5.	21.3	6.8	48.0	200.	77.7	2.18	.13	180.0	18.0	24.0
NR OBS	3	3	3	3	2	2	3	1	2	3	3



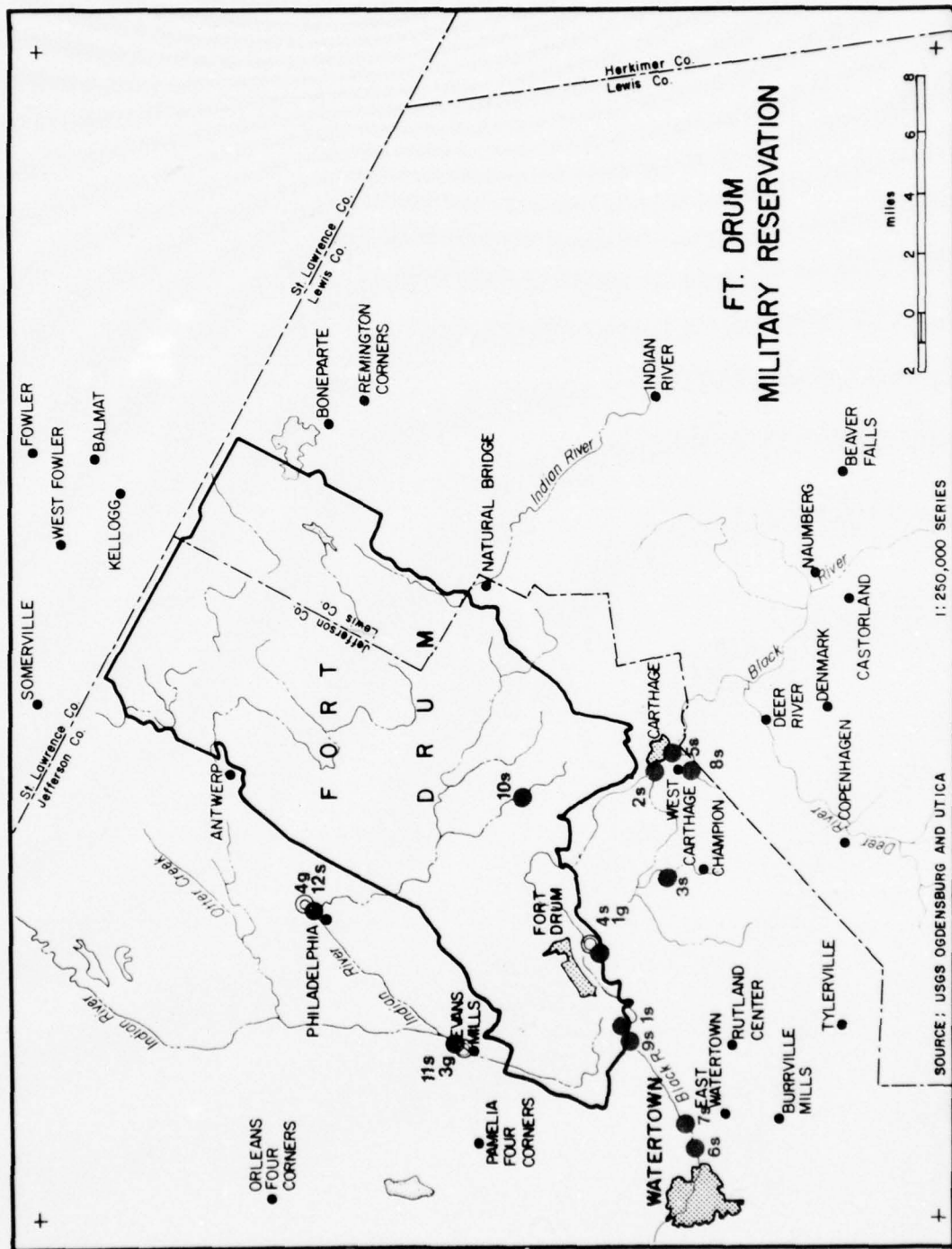
MAPS

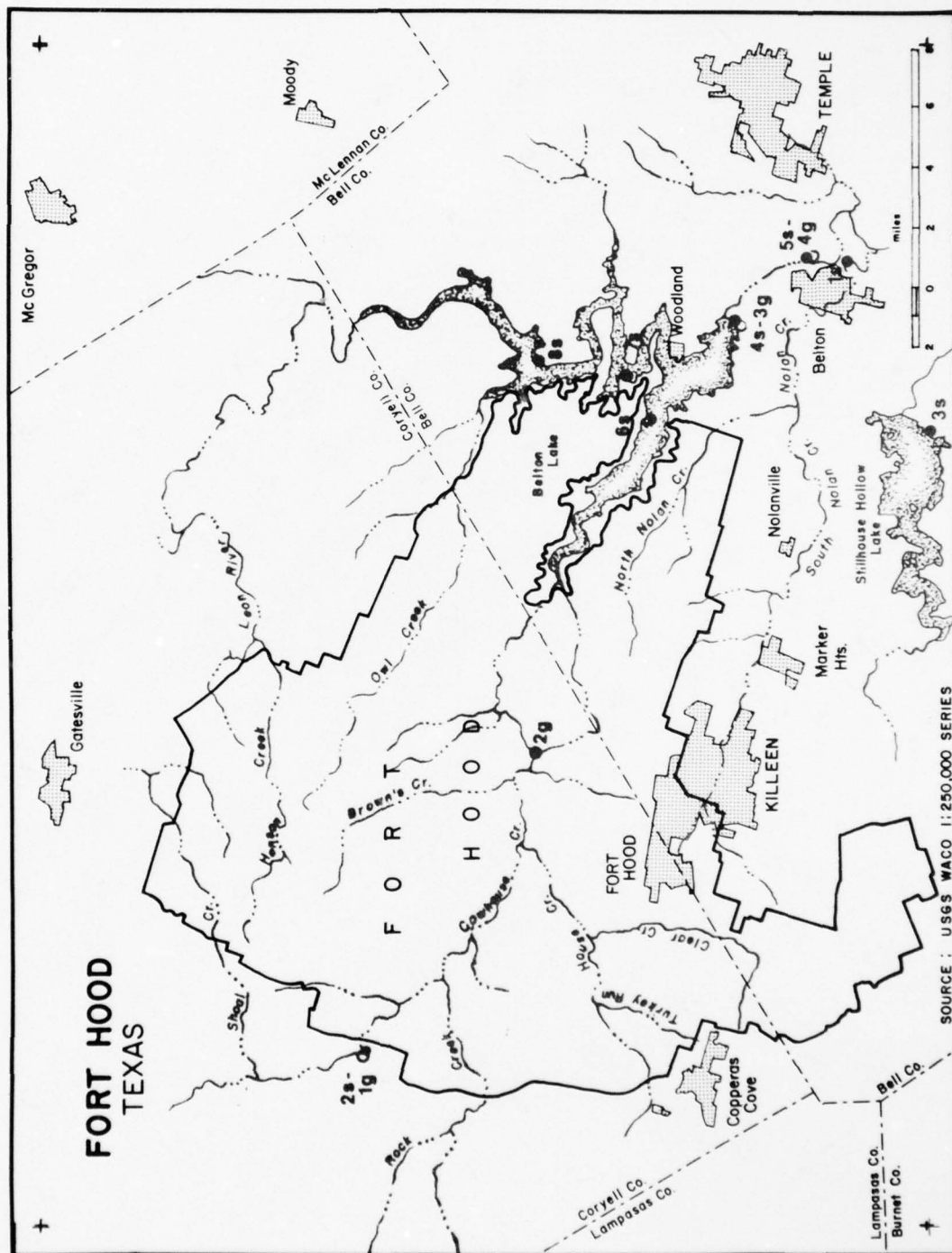


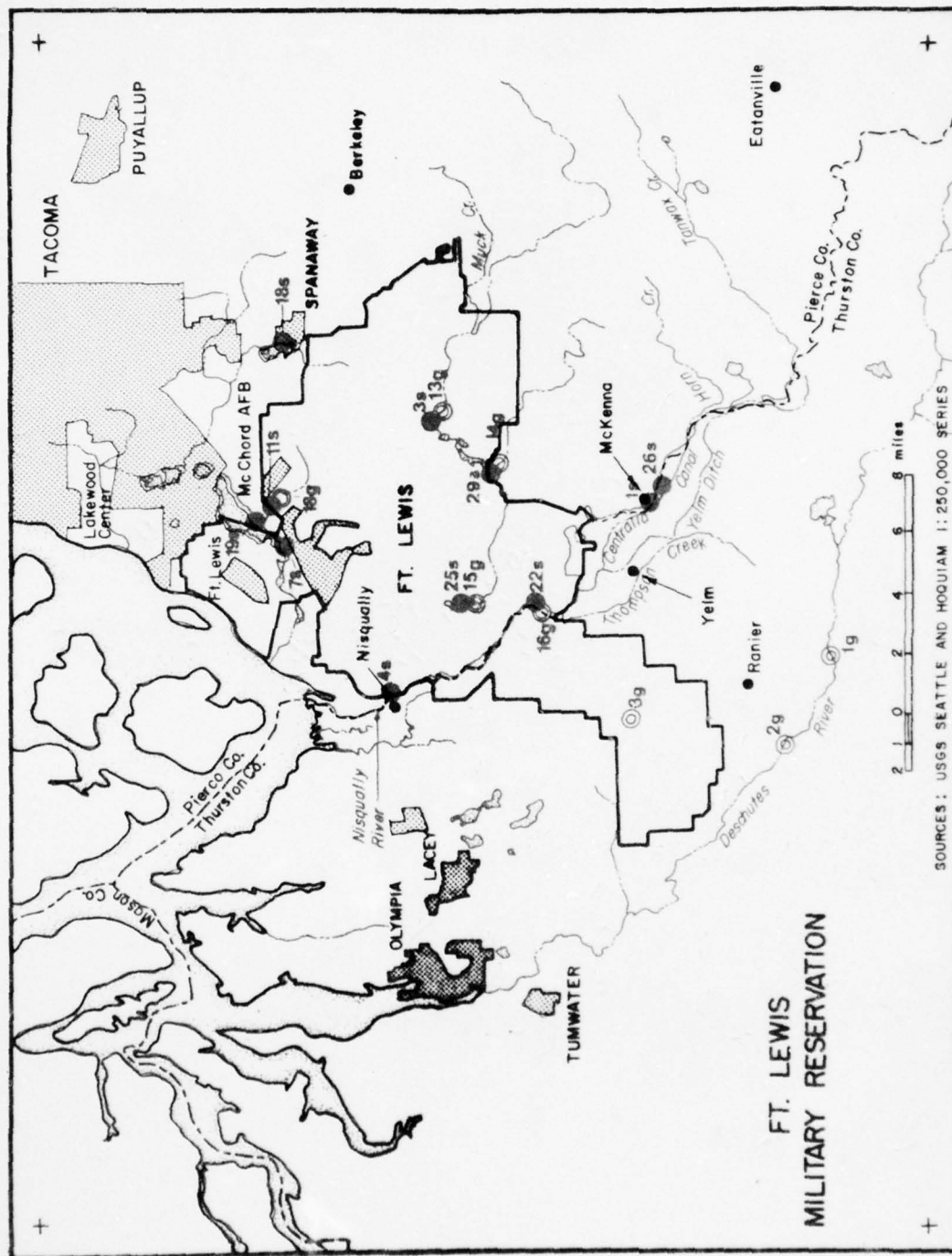




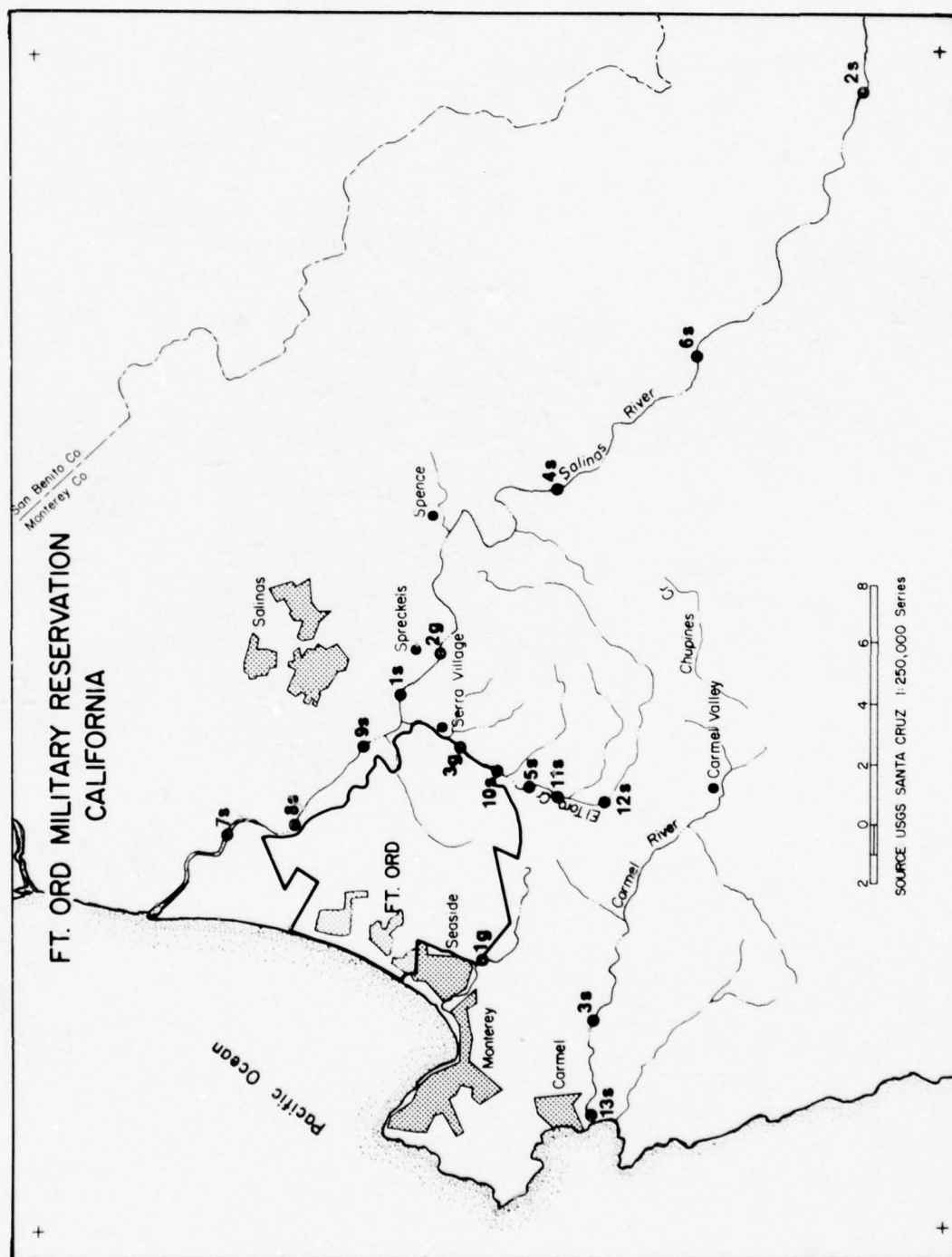








SOURCES: USGS SEATTLE AND HOQUIAM 1:250,000 SERIES

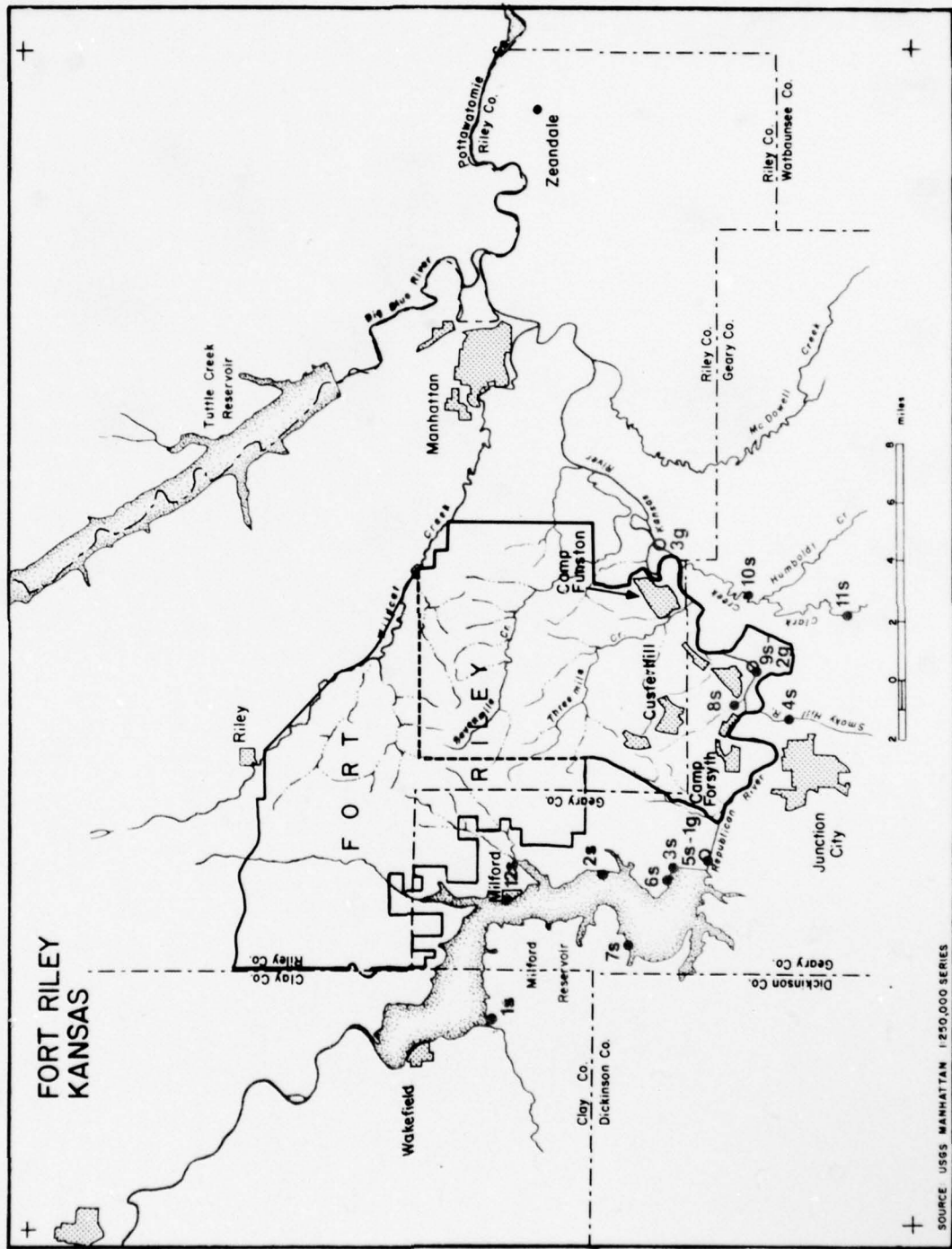


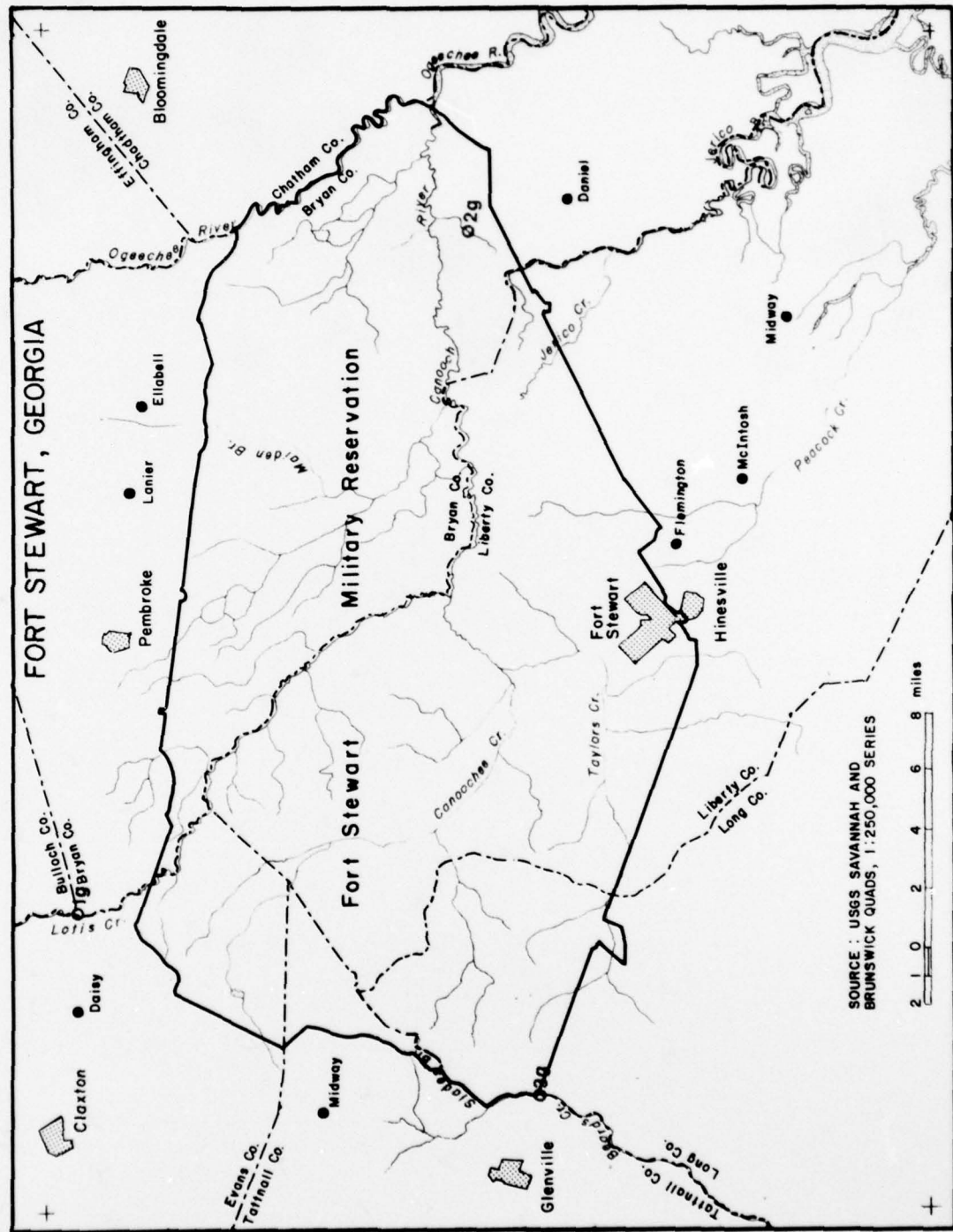


**FT. POLK MILITARY RESERVATION  
LOUISIANA**

Map showing the Ft. Polk Military Reservation boundary in Louisiana. The reservation is divided into North Ft. Polk and South Ft. Polk. Key locations marked include Leesville, New Llano, and various numbered points (1s, 2s, 3s, 5s, 6s, 10s, 11s, 12s, 13s, 24s, 25s, 26s, 27s, 28s). The Calcasieu River and Chito Cr. are also shown. A scale bar indicates distances up to 8 miles.

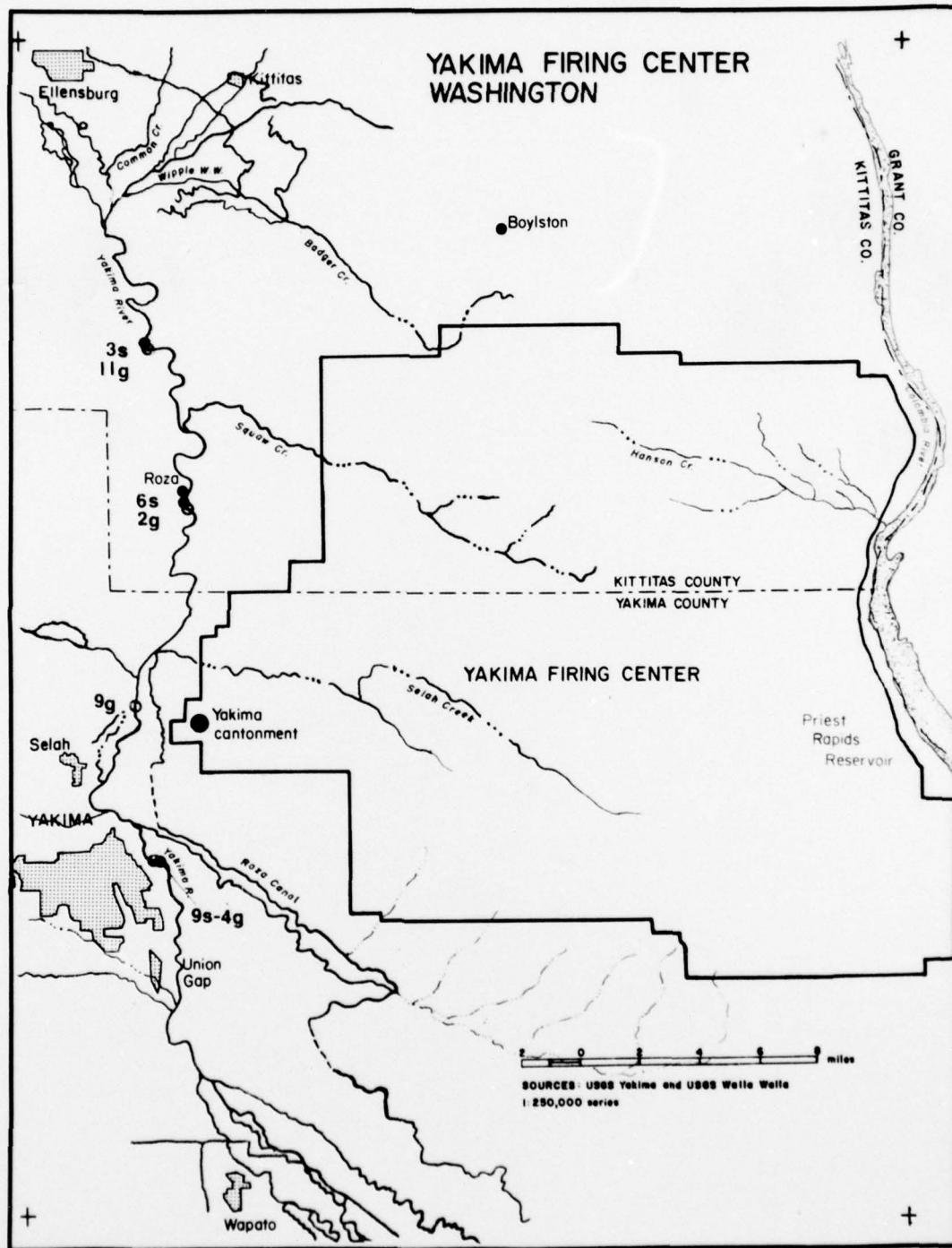
SOURCE: USGS ALEXANDRIA and LAKE CHARLES | 250,000 Series





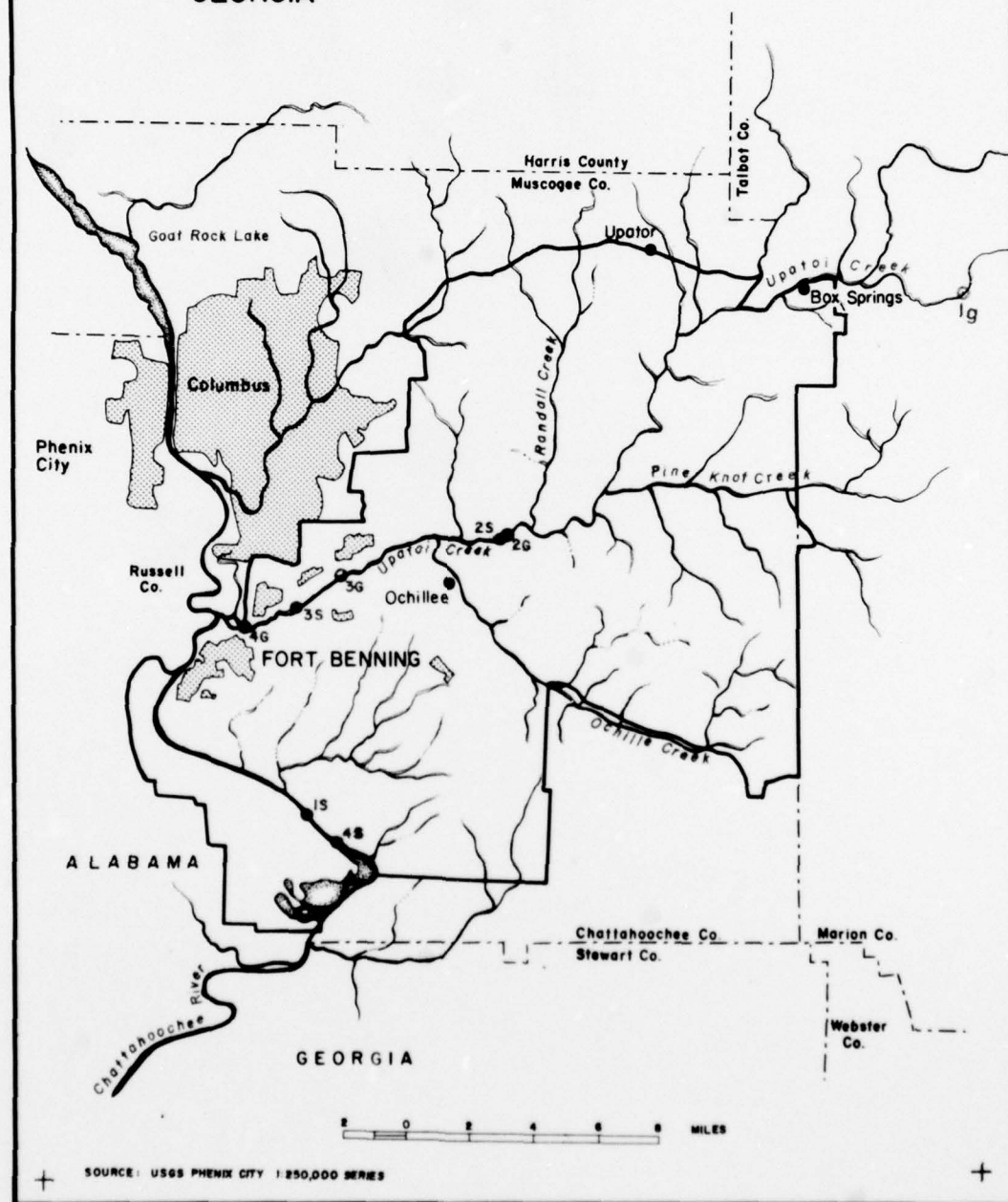
SOURCE : USGS SAVANNAH AND  
BRUNSWICK QUADS, 1:250,000 SERIES

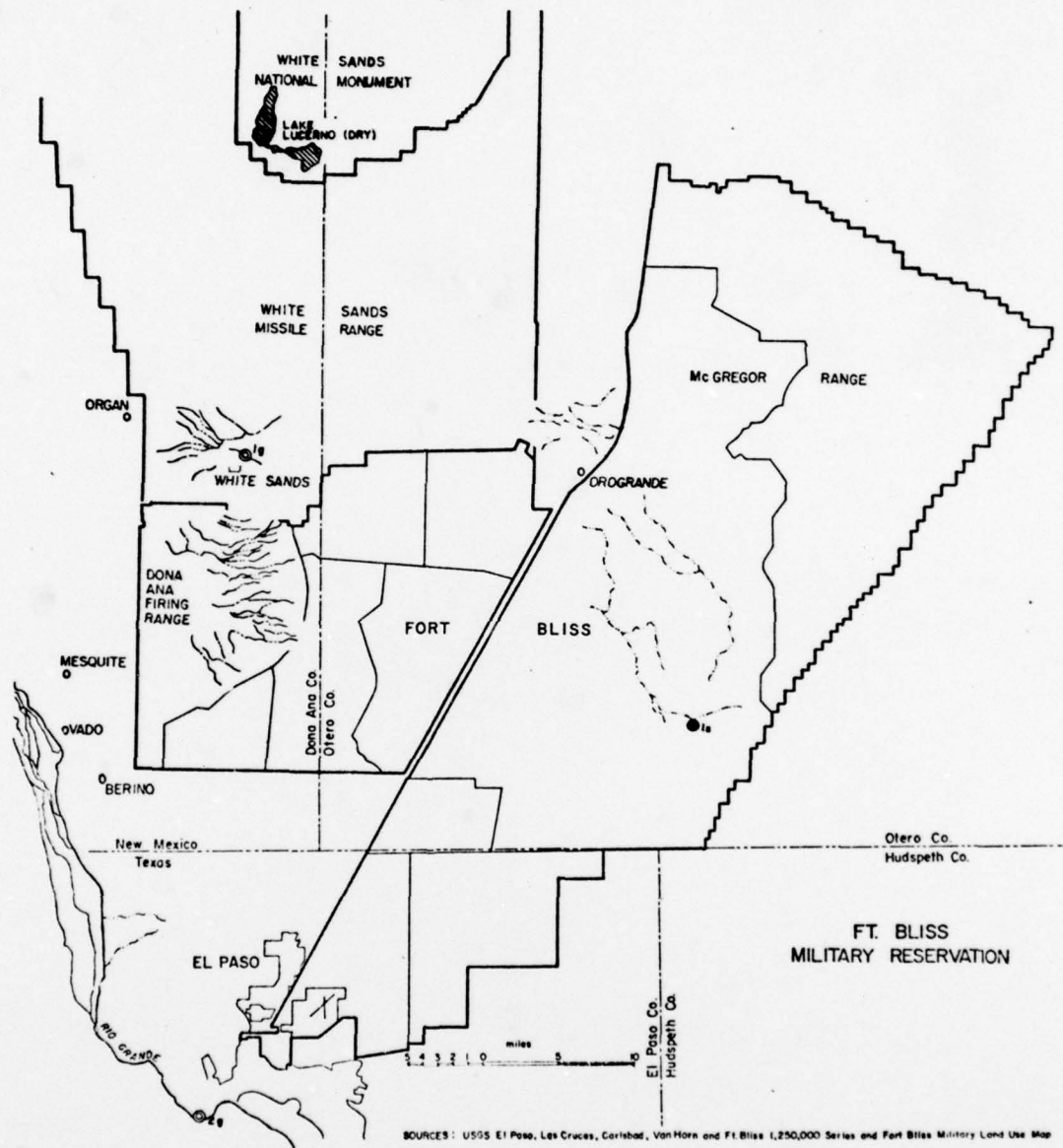


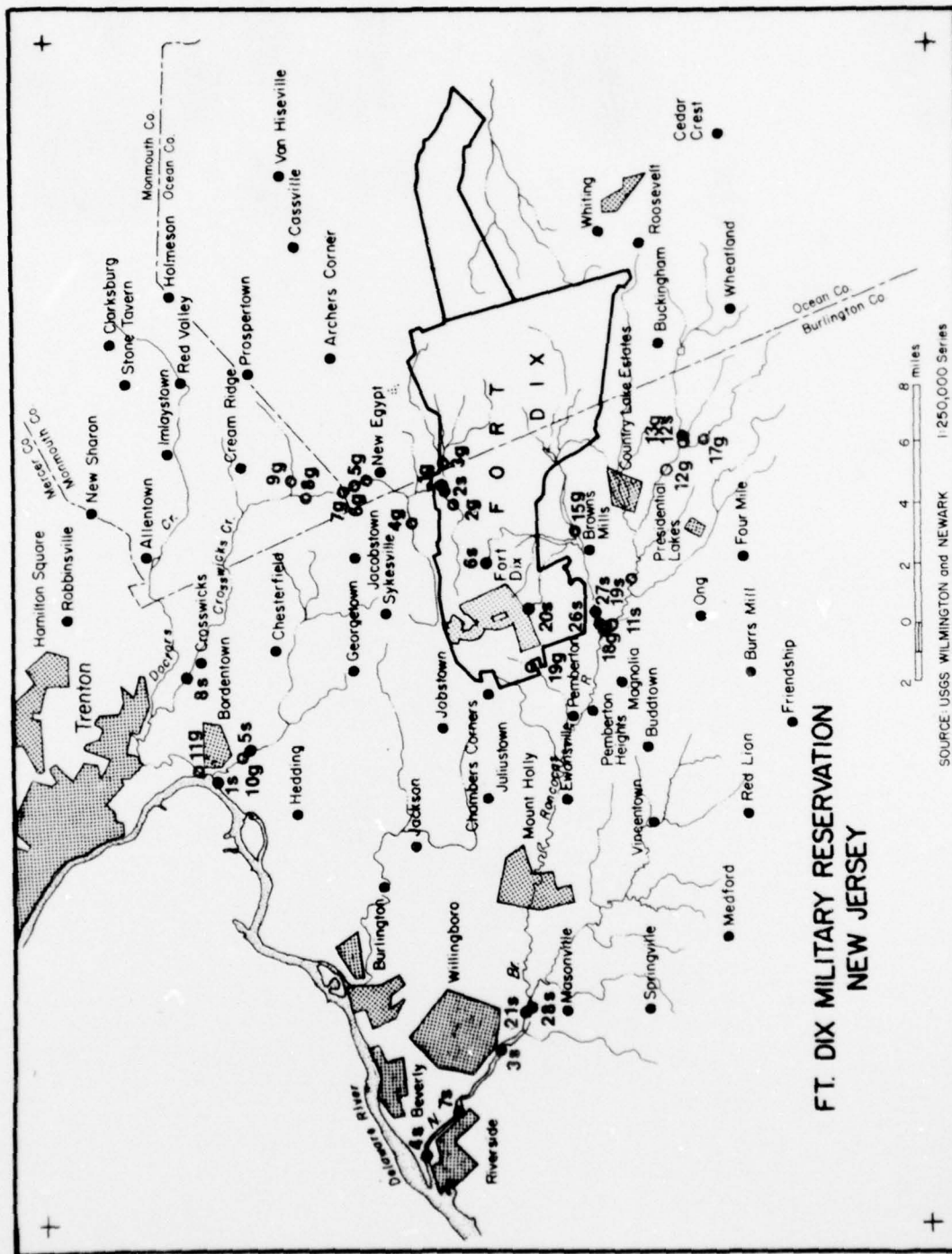




# FORT BENNING GEORGIA

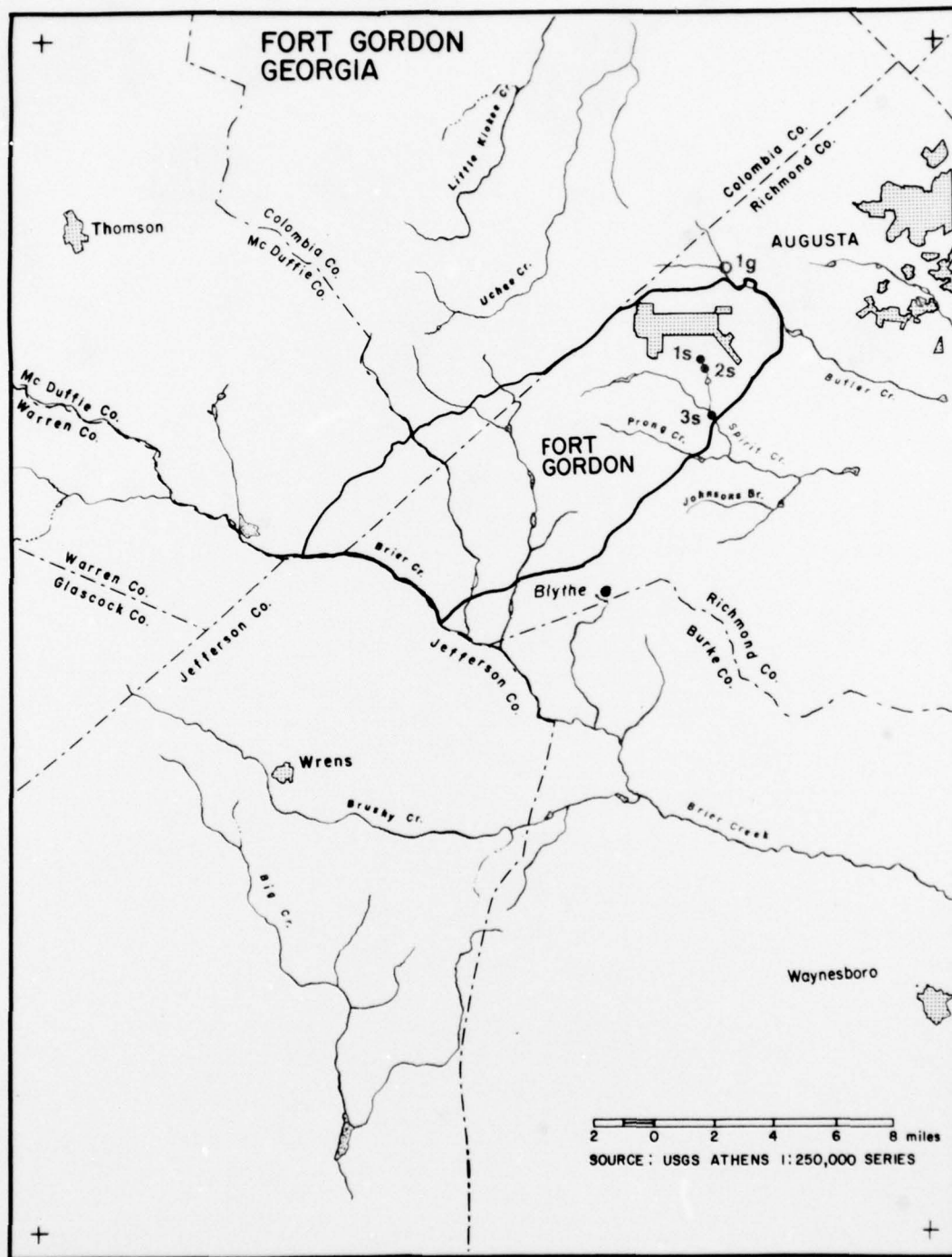




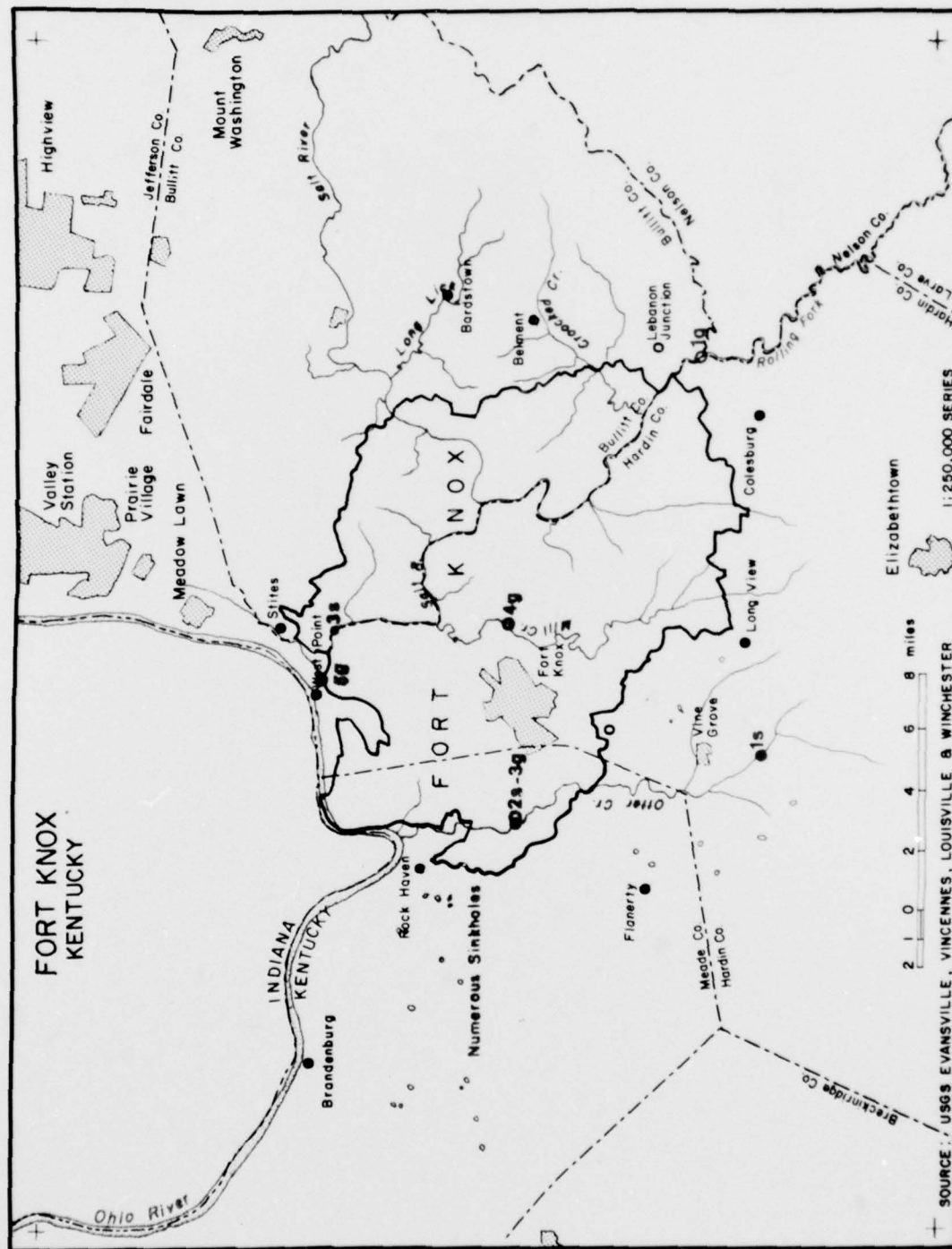


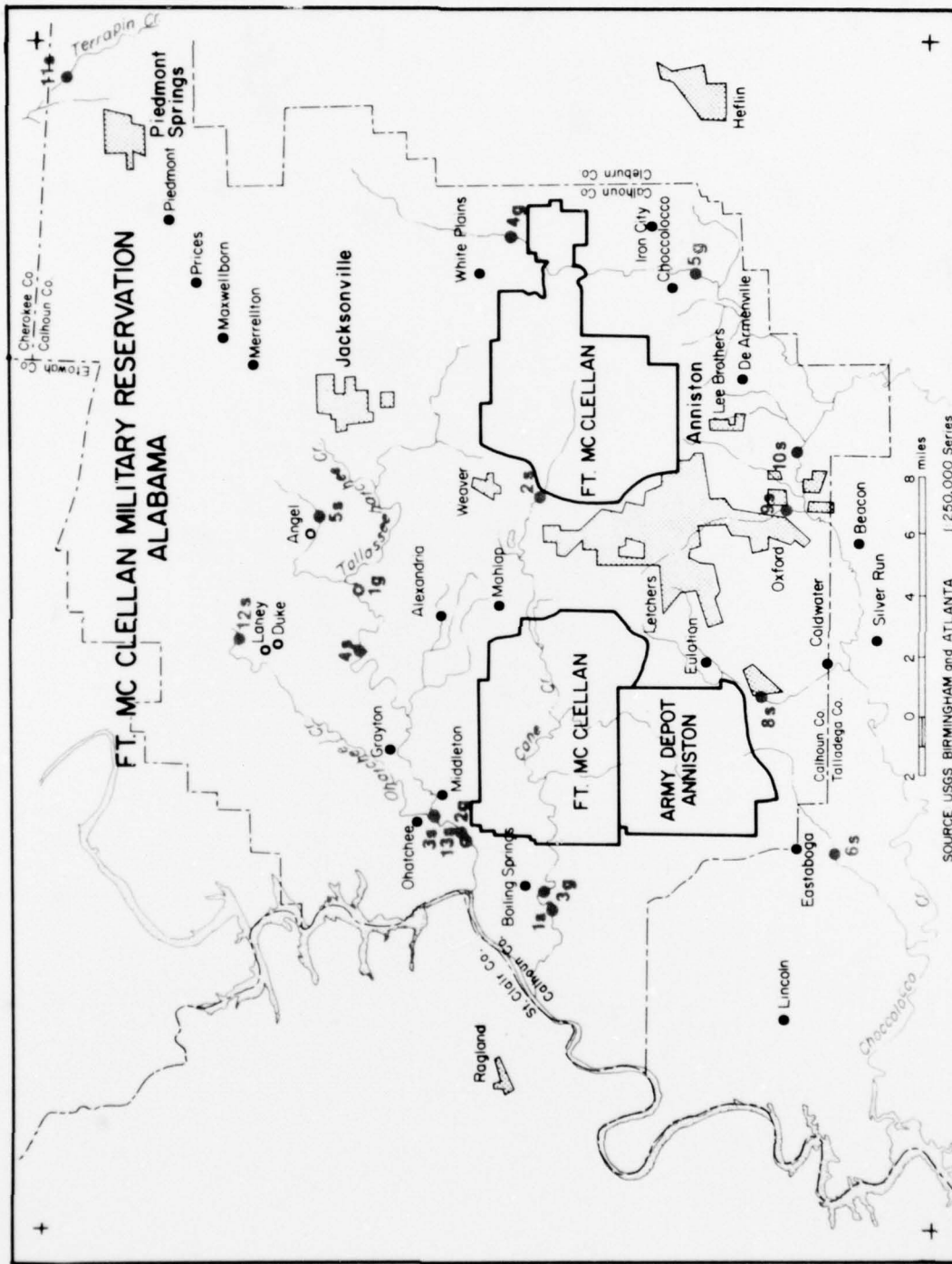
# FT. DIX MILITARY RESERVATION NEW JERSEY

SOURCE: USGS, WILMINGTON AND NEWARK 1:250,000 Series







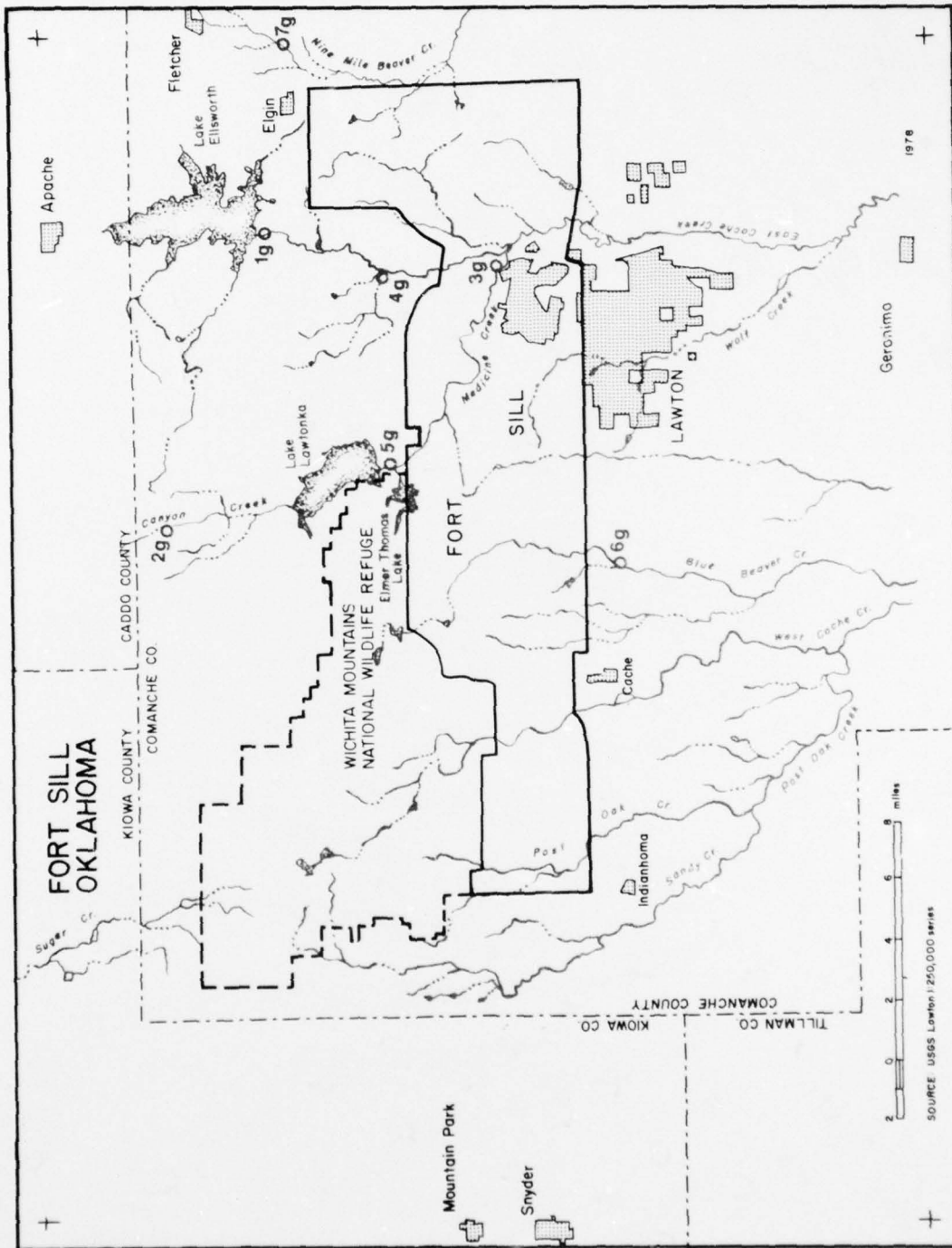


SOURCE USGS BIRMINGHAM and ATLANTA 1:250,000 Series

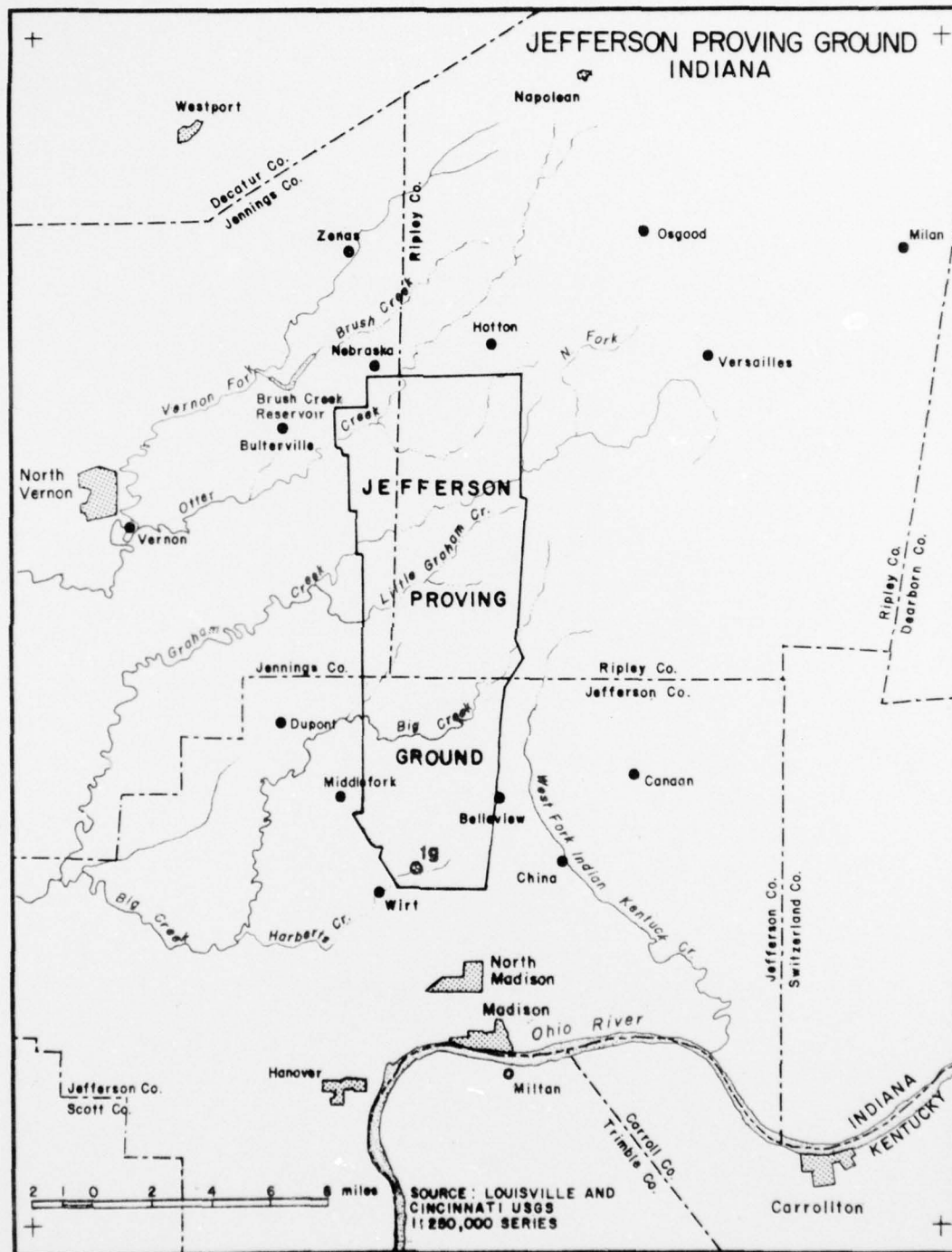
**FORT RUCKER**  
**ALABAMA**

Map showing the location of Fort Rucker, Alabama, relative to surrounding counties (Dale, Coffee, Houston, Geneva, Henry, and Dothan) and major roads. The map includes labels for various crossroads (e.g., Barnes Crossroads, Browns Crossroads, Backlams Crossroads) and distances (e.g., 1s, 2s, 3s, 4s, 5s, 6s, 7s, 8s, 9s, 1g, 2g, 3g, 4g, 5g, 6g, 7g, 8g, 9g). A scale bar indicates distances in miles (0 to 2).

SOURCE: USGS DOTHAN 1:250,000 SERIES







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Goran, William D

Water quality data for Army military installations / by W. D. Goran,  
R. E. Riggins. -- Champaign, IL : Construction Engineering Research Laboratory ;  
Springfield, VA : available from NTIS, 1979.  
129 p. ; 27 cm. (Technical report ; N-63)

1. Water quality. 2. Military bases -- water supply. I. Riggins, Robert E.  
II. Title. III. Series: U.S. Construction Engineering Research Laboratory.  
Technical report ; N-63.